REF
388.4097
C498e

D

SF
C58
#101
(5/93)

CITYWIDE TRAVEL BEHAVIOR SURVEY

DOCUMENTS DEPT.
JUN 22 1993
SAN FRANCISCO
PUBLIC LIBRARY

*A Joint Project of the San Francisco Department of City Planning,
the San Francisco Public Utilities Commission and
the San Francisco County Transportation Authority*

May 1993

Employees and Employers

5/S

DOCUMENTS DEPT.

SAN FRANCISCO
PUBLIC LIBRARY

REFERENCE
BOOK

Not to be taken from the Library

CITYWIDE TRAVEL BEHAVIOR SURVEY

A Joint Project of the San Francisco Department of City Planning,
the San Francisco Public Utilities Commission and
the San Francisco County Transportation Authority

May 1993

SAN FRANCISCO PUBLIC LIBRARY
3 1223 04335 8069

REF 388.4097 C498e

Citywide travel behavior
survey
[1993]

3 1223 04335 8069

S.F. PUBLIC LIBRARY

Table of Contents

I. OVERVIEW 1
- A. SUMMARY OF SURVEY RESULTS 2
- B. PURPOSES OF SURVEY 4
- C. DESCRIPTION OF THE CTBS SURVEY 4
  - 1. DEFINITION OF THE SURVEY UNIVERSE 4
    - a. Survey Universe 4
    - b. Data Sources 5
    - c. Employer and Employee Survey Instruments 5
- D. SUMMARY OF SURVEY METHODOLOGY 6
  - 1. SAMPLING TECHNIQUES 6
    - a. Stratification by Superdistrict and Employment Size 6
    - b. Cluster Sampling of Employees 6
  - 2. SAMPLE SIZE AND SURVEY CONFIDENCE LEVELS 6
  - 3. SURVEY ADMINISTRATION 7
    - a. Pre-Contact by Mayor 7
    - b. Consultant Contact 7
- E. GLOSSARY OF TERMS 7

II. WORKER TRAVEL PATTERNS 10
- A. DISTRIBUTIONS OF SAN FRANCISCO WORKFORCE BY COMMUTE ORIGINS 11

B. DISTRIBUTION OF WORKERS BY COMMUTE TRIP ORIGINS 13
- 1. PRIMARY AND SECONDARY MODE CHOICES BY TRIP ORIGIN 13
- 2. COMMUTE TO WORK: MODE USE DISTRIBUTIONS BY TRIP ORIGIN 14
  - a. Primary Mode Choices To Work 15
  - b. Secondary Mode Choices To Work 17
- 3. COMMUTE FROM WORK: MODE USE DISTRIBUTIONS BY TRIP DESTINATIONS 19
  - a. Primary Mode Choices From Work 19
  - b. Secondary Mode Choices From Work 21
- 4. SUMMARY OF MODE USE DISTRIBUTIONS BY TRIP ORIGIN 23

C. SHARE OF EACH MODE TOTAL BY WORKER RESIDENCE 23
- 1. GEOGRAPHIC SHARES OF COMMUTE TO WORK MODE CHOICES 24
  - a. Geographic Shares of Primary Mode Choices to Work 24
  - b. Geographic Shares of the Secondary Mode Choices to Work 28
- 2. GEOGRAPHIC SHARES OF COMMUTE FROM WORK BY MODE 28
  - a. Geographic Shares of Primary Mode Choices From Work 28
  - b. Geographic Shares of Secondary Mode Choices From Work 28
- 3. SUMMARY OF MODE SHARES BY WORKER RESIDENCE 28

D. INTERMEDIATE COMMUTE STOPS BY PURPOSE 29
- 1. PURPOSES FOR STOPS DURING COMMUTE TO WORK 29
- 2. PURPOSES FOR STOPS DURING COMMUTE FROM WORK 32

E. INTERMEDIATE COMMUTE STOPS BY MODE 35
- 1. MODE USE FOR INTERMEDIATE STOPS DURING COMMUTE TO WORK 35
- 2. MODE USE FOR INTERMEDIATE STOPS DURING COMMUTE FROM WORK 37
- 3. SUMMARY OF INTERMEDIATE STOPS BY PURPOSE AND BY MODE 39

F. WORKER MODE CHOICES AND TRIP RATES BY LAND USE CLASSIFICATIONS 39
  1. MODE TO WORK BY LAND USE ACTIVITY 39
    a. Mode Splits by Land Use Activity 39
    b. Land Use Activity Mode Shares 41
    c. Summary of Mode Splits by Land Use Activity 43
  2. WORKER NON-COMMUTE TRIP RATES BY LAND USE ACTIVITIES 43
    a. Worker Daily Trip Rates 44
    b. Non-Commute Trip Rates by All Modes 44
    c. Trip Rates by Drive Alone, Rideshare, Transit and All Other Modes 45
    c. Summary of Non-Commute Trip Rates and Mode Splits 49
G. RIDESHARE MODE AVERAGE OCCUPANCY BY DESTINATION 49
H. AVERAGE VEHICLE RIDERSHIP (AVR) 50
  1. AVR BY ESTABLISHMENT SIZE FROM 6:00AM TO 10:00AM 50
  2. ALL DAY AVR BY ESTABLISHMENT SIZE 51

III. WORKER TRAVEL BEHAVIOR INFLUENCES AND DETERMINANTS 52
A. TRAVEL BEHAVIOR INFLUENCES 52
  1. SUBJECTIVE INFLUENCES ON MODE CHOICE 52
B. WORKERS BY OCCUPATION AND HOUSEHOLD INCOME 54
C. 1991 HOUSEHOLD INCOMES BY COMMUTE MODE AND WORKER RESIDENCE 55
  1. 1991 HOUSEHOLD INCOME AND COMMUTE MODE 55
    a. Household Income by Commute Mode 55
    b. Mode Choice by Household Income 56
  2. 1991 HOUSEHOLD INCOME BY COMMUTE ORIGIN 57
  3. SUMMARY OF HOUSEHOLD INCOME BY COMMUTE MODE AND WORKER RESIDENCE 58

D. TRAVEL TIMES BY WORKER ORIGIN BY MODE 58
E. MODE SPLITS BY WORKER AUTOMOBILE OWNERSHIP 60
F. PARKING COSTS FOR WORKERS WHO DRIVE ALONE TO WORK 60
  1. PARKING COSTS CITYWIDE BY WORKER COMMUTE ORIGINS 60
  2. PARKING COSTS IN SUPERDISTRICT 1 BY COMMUTE ORIGINS 61
  3. PARKING COSTS OUTSIDE DOWNTOWN SAN FRANCISCO BY COMMUTE ORIGINS 61
  4. SUMMARY OF PARKING COSTS FOR WORKERS WHO DRIVE ALONE TO WORK 62
G. LINEAR CORRELATION ANALYSIS 63

IV. EMPLOYER PROGRAMS 68
A. ALTERNATIVE WORK SCHEDULES AT SAN FRANCISCO ESTABLISHMENTS 68
  1. CTBS-DEFINED WORK SCHEDULE CATEGORIES 68
  2. WORK SCHEDULES FOR SAN FRANCISCO ESTABLISHMENTS 68
B. ALTERNATIVE WORK SCHEDULES FOR ESTABLISHMENTS WITH 100 OR MORE EMPLOYEES 70
C. EMPLOYER PREFERENCES AND INTERESTS IN MARKETING COMMUTE ALTERNATIVES 71

APPENDIX

A. REGIONAL DEFINITIONS BY ZIP CODES i
B. EMPLOYER SURVEY INSTRUMENT ii
C. EMPLOYEE SURVEY INSTRUMENT iv
D. MODE SPLITS: DOWNTOWN VS. REST OF CITY vi
E. DAILY TRIP GENERATION RATES IN SAN FRANCISCO, 1992 x

TABLES

TABLE IIA1
PERCENTAGES OF SAN FRANCISCO CIVILIAN EMPLOYMENT BY WORKER ORIGIN, 1992 ____ 11

TABLE IIA2
ESTIMATED NUMBER OF SAN FRANCISCO WORKERS BY PLACE OF RESIDENCE, 1992 ____ 12

TABLE IIB1
PRIMARY AND SECONDARY COMMUTE MODES BY WORKER ORIGIN, 1992 ____ 13

TABLE IIB2
PRIMARY COMMUTE MODE CHOICE TO WORK FOR SAN FRANCISCO WORKERS, 1992 ____ 14

TABLE IIB3
PRIMARY MODE CHOICE TO WORK FOR SAN FRANCISCO WORKERS BY COMMUTE ORIGIN, 1992 ____ 15

TABLE IIB4
SECONDARY MODE CHOICE TO WORK FOR SAN FRANCISCO WORKERS BY COMMUTE ORIGIN, 1992 ____ 18

TABLE IIB5
PRIMARY COMMUTE MODE CHOICE TO AND FROM WORK FOR SAN FRANCISCO WORKERS, 1992 ____ 19

TABLE IIB6
PRIMARY COMMUTE MODE CHOICE FROM WORK IN SAN FRANCISCO BY WORKER TRIP DESTINATIONS, 1992 ____ 20

TABLE IIB7
SECONDARY COMMUTE MODE CHOICE FROM WORK FOR SAN FRANCISCO WORKERS, 1992 ____ 22

TABLE IIC1
PERCENTAGES OF SAN FRANCISCO CIVILIAN EMPLOYMENT, 1992 ____ 24

TABLE IIC2
GEOGRAPHIC SHARES OF PRIMARY COMMUTE MODES TO WORK, 1992 ____ 25

TABLE IIC3
GEOGRAPHIC SHARES OF SECONDARY COMMUTE MODES TO WORK, 1992 ____ 25

TABLE IIC4
GEOGRAPHIC SHARES OF PRIMARY COMMUTE MODES FROM WORK, 1992 ____ 28

TABLE IIC5
GEOGRAPHIC SHARES OF SECONDARY COMMUTE MODES FROM WORK, 1992 ____ 28

TABLE IID1
INTERMEDIATE STOPS DURING COMMUTE TO WORK BY PURPOSE, 1992 ____ 29

TABLE IID2
INTERMEDIATE STOPS DURING COMMUTE TO WORK IN SUPERDISTRICT 1 BY PURPOSE, 1992 ____ 30

TABLE IID3
INTERMEDIATE STOPS DURING COMMUTE TO WORK IN SUPERDISTRICTS 2, 3 AND 4 BY PURPOSE, 1992 ____ 30

TABLE IID4
INTERMEDIATE STOPS DURING COMMUTE FROM WORK BY PURPOSE, 1992 ____ 32

TABLE IID5
INTERMEDIATE STOPS DURING COMMUTE FROM WORK IN SUPERDISTRICT 1 BY PURPOSE, 1992 ____ 33

TABLE IID6
INTERMEDIATE STOPS DURING COMMUTE FROM WORK IN SUPERDISTRICTS 2, 3 AND 4 BY PURPOSE, 1992 ____ 33

TABLE IIE1
INTERMEDIATE STOPS DURING COMMUTE TO WORK BY MODE, 1992 ____ 35

TABLE IIE2
INTERMEDIATE STOPS DURING COMMUTE TO WORK IN SUPERDISTRICT 1 BY MODE, 1992 ____ 36

TABLE IIE3
INTERMEDIATE STOPS DURING COMMUTE TO WORK IN SUPERDISTRICTS 2, 3 AND 4 BY MODE, 1992 ____ 36

TABLE IIE4
INTERMEDIATE STOPS DURING COMMUTE FROM WORK BY MODE, 1992 ____ 37

TABLE IIE5
INTERMEDIATE STOPS DURING COMMUTE FROM WORK IN SUPERDISTRICT 1 BY MODE, 1992 ____ 38

TABLE IIE6
INTERMEDIATE STOPS DURING COMMUTE FROM WORK IN SUPERDISTRICTS 2, 3 AND 4 BY MODE, 1992 38

TABLE IIF1
MODE SPLITS TO WORK BY LAND USE ACTIVITY, 1992 40

TABLE IIF2
LAND USE SHARES OF COMMUTE MODES, 1992 41

TABLE IIF3
ALL SAN FRANCISCO WORKERS BY LAND USE AND COMMUTE MODE, 1992 43

TABLE IIF4
AVERAGE DAILY WORKER TRIP RATES (PER 1000 SQ.FT.), 1992 44

TABLE IIF5
AVERAGE DAILY NON-COMMUTE TRIP RATES (PER 1000 SQ.FT.), 1992 45

TABLE IIF6
DRIVE ALONE NON-COMMUTE TRIP RATES (PER 1000 SQ.FT.) AND MODE SPLITS BY LAND USE ACTIVITY, 1992 46

TABLE IIF7
MUNI NON-COMMUTE TRIP RATES (PER 1000 SQ.FT.) AND MODE SPLITS BY LAND USE ACTIVITY, 1992 46

TABLE IIF8
TRANSIT (MUNI AND BART) NON-COMMUTE TRIP RATES (PER 1000 SQ.FT.) AND MODE SPLITS BY LAND USE ACTIVITY, 1992 47

TABLE IIF9
DAILY AVERAGE NON-COMMUTE TRIPS USING OTHER MODES AND MODE SPLITS (PER 1000 SQ.FT.) BY LAND USE ACTIVITY, 1992 48

TABLE IIG1
AVERAGE NUMBER OF PEOPLE PER RIDESHARE VEHICLE, 1992 49

TABLE IIH1
AVERAGE VEHICLE RIDERSHIP (AVR) BY ESTABLISHMENT SIZE AND LOCATION FOR WORKERS ARRIVING TO WORK BETWEEN 6:00 A.M. AND 10:00 A.M., 1992 51

TABLE IIH2
ALL DAY AVERAGE VEHICLE RIDERSHIP (AVR) BY ESTABLISHMENT SIZE, 1992 51

TABLE IIIA1
COMMUTE TO WORK MODE CHOICE INFLUENCES FOR ALL SAN FRANCISCO WORKERS, 1992 53

TABLE IIIA2
COMMUTE TO WORK MODE CHOICE INFLUENCES FOR SAN FRANCISCO WORKERS WHO DRIVE ALONE, 1992 53

TABLE IIIB1
HOUSEHOLD INCOME BY SAN FRANCISCO WORKER OCCUPATIONS, 1992 54

TABLE IIIC1
1991 HOUSEHOLD INCOME BY WORKER MODE CHOICE, 1992 55

TABLE IIIC2
MODE SPLITS BY 1991 HOUSEHOLD INCOMES FOR SAN FRANCISCO WORKERS, 1992 56

TABLE IIIC3
1991 HOUSEHOLD INCOMES BY WORKER RESIDENCE, 1992 57

TABLE IIID1
JOURNEY TO WORK TIMES, 1992 58

TABLE IIIE1
MODE SPLITS BY WORKER AUTOMOBILE OWNERSHIP, 1992 60

TABLE IIIF1
PARKING COSTS CITYWIDE BY WORKER COMMUTE ORIGIN, 1992 61

TABLE IIIF2
PARKING COSTS IN SUPERDISTRICT 1 BY WORKER COMMUTE ORIGIN, 1992 62

TABLE IIIF3
PARKING COSTS IN SUPERDISTRICTS 2, 3 AND 4 BY WORKER COMMUTE ORIGIN, 1992 62

TABLE IIIG1
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM ALL ORIGINS TO SAN FRANCISCO, 1992 63

TABLE IIIG2
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE EAST BAY TO SAN FRANCISCO, 1992 64

TABLE IIIG3
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE EAST BAY TO SUPERDISTRICT 1, 1992 ____ 64

TABLE IIIG4
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE EAST BAY TO SUPERDISTRICT 2, 3 AND 4, 1992 ____ 64

TABLE IIIG5
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE NORTH BAY TO SAN FRANCISCO, 1992 ____ 64

TABLE IIIG6
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE NORTH BAY TO SUPERDISTRICT 1, 1992 ____ 65

TABLE IIIG7
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE NORTH BAY TO SUPERDISTRICT 2, 3 AND 4, 1992 ____ 65

TABLE IIIG8
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE SOUTH BAY TO SAN FRANCISCO, 1992 ____ 65

TABLE IIIG9
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE SOUTH BAY TO SUPERDISTRICT 1, 1992 ____ 65

TABLE IIIG10
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE SOUTH BAY TO SUPERDISTRICT 2, 3 AND 4, 1992 ____ 65

TABLE IIIG11
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES WITHIN SAN FRANCISCO, 1992 ____ 66

TABLE IIIG12
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM WITHIN SUPERDISTRICT 1 TO SUPERDISTRICT 1, 1992 ____ 66

TABLE IIIG13
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM SUPERDISTRICTS 2, 3 AND 4 TO SUPERDISTRICT 1, 1992 ____ 66

TABLE IIIG14
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM SUPERDISTRICT 1 TO SUPERDISTRICTS 2, 3 AND 4, 1992 66

TABLE IIIG15
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES WITHIN SUPERDISTRICTS 2, 3 AND 4, 1992 66

TABLE IIIG16
CORRELATION COEFFICIENTS FOR SUBJECTIVE COMMUTE MODE INFLUENCES FOR ALL TRIPS TO SAN FRANCISCO, 1992 67

TABLE IVA1
ALTERNATIVE WORK SCHEDULES FOR SAN FRANCISCO ESTABLISHMENTS, 1992 69

TABLE IVB1
ALTERNATIVE WORK SCHEDULES FOR SAN FRANCISCO ESTABLISHMENTS WITH 100 OR MORE EMPLOYEES, 1992 70

TABLE IVC1
MARKETING PREFERENCES AMONG COMMUTE ALTERNATIVE PROGRAMS FOR ALL SAN FRANCISCO EMPLOYERS, 1992 72

TABLE IVC2
MARKETING PREFERENCES AMONG COMMUTE ALTERNATIVE PROGRAMS FOR SUPERDISTRICT 1 EMPLOYERS, 1992 72

TABLE IVC3
MARKETING PREFERENCES AMONG COMMUTE ALTERNATIVE PROGRAMS FOR SUPERDISTRICT 2, 3 AND 4 EMPLOYERS, 1992 73

FIGURES

FIGURE IC1
SAN FRANCISCO SUPERDISTRICT BOUNDARIES AND LOCATION OF SAMPLE ESTABLISHMENTS, 1992 5

FIGURE IIA1
GEOGRAPHIC SHARES OF THE SAN FRANCISCO CIVILIAN WORKFORCE, 1992 12

FIGURE IIB1
SAN FRANCISCO WORKER COMMUTE MODE SHARES 14

FIGURE IIB2
PRIMARY MODE SPLIT DISTRIBUTION FOR RESIDENT SAN FRANCISCO WORKERS, 1992 ____ 16

FIGURE IIB3
PRIMARY MODE SPLIT DISTRIBUTION FOR WORKERS WHO COMMUTE TO SAN FRANCISCO, 1992 ____ 16

FIGURE IIB4
RESIDENT WORKER SHARES OF MUNI RIDERSHIP TO WORK, 1992 ____ 17

FIGURE IIB5
COMPARISON OF NORTH AND EAST BAY COMMUTE MODES TO AND FROM WORK, 1992 ____ 21

FIGURE IIC1
COMPARISON OF SAN FRANCISCO WORKFORCE SHARES TO PRIMARY MODE SHARES, 1992 ____ 26

FIGURE IID1
MODE USE FOR INTERMEDIATE STOPS DURING COMMUTE TO SAN FRANCISCO ____ 31

FIGURE IID2
MODE USE FOR INTERMEDIATE STOPS DURING COMMUTE FROM WORK IN SAN FRANCISCO, 1992 ____ 34

FIGURE IIF1
MODE SPLITS TO WORK BY LAND USE ACTIVITY, 1992 ____ 40

FIGURE IIF2
COMPARISON OF ALL COMMUTERS WORKING IN A LAND USE ACTIVITY TO THEIR MODE SHARES, 1992 ____ 42

FIGURE IIIDI
MEAN TRAVEL TIMES BY TRIP ORIGIN AND MODE ____ 59

FIGURE IIIF1
DAILY PARKING COSTS FOR ALL ORIGINS, 1992 ____ 60

FIGURE IVA1
ALTERNATIVE WORK SCHEDULES FOR SAN FRANCISCO ESTABLISHMENTS, 1992 ____ 70

I. OVERVIEW

The City and County of San Francisco "Citywide Travel Behavior Survey" (CTBS) documents the travel behavior of people who visit and work in San Francisco. The CTBS was conducted in 1992 in two coordinated phases,one for workers and the other for visitors. This report evaluates worker travel patterns. Visitor travel surveys comprise the second CTBS phase, and those results are available in a companion CTBS document.

The CTBS involved participation of government agencies, private transportation consultants and local businesses in San Francisco. The San Francisco Department of City Planning conducted the study. Funding was provided by the San Francisco County Transportation Authority and the San Francisco Public Utilities Commission. Department of City Planning responsibilities included project management, survey instrument design, sample selection, data analysis and report preparation. Nelson\Nygaard Consulting Associates provided survey administration services. MetroDynamics provided consulting advice on technical aspects of survey design and data analysis.

This CTBS report evaluates worker travel behavior from "Employer Survey" and "Employee Survey" findings. Two supporting documents, "Technical Memorandum: Number 1, Survey Methodology" and "Technical Memorandum: Number 2, Average Vehicle Ridership Calculations," contain detailed inferences, statistics and analyses that are summarized in this report. These two documents are available from the San Francisco Department of City Planning. This CTBS report includes the following sections:

***Section I,* OVERVIEW,** contains a "Summary of Survey Results." The subsections explain the CTBS purposes and survey methodology. The "Purpose of Survey" subsection provides project background, survey requirements and possible applications of report findings. A "Description of the Survey" includes the general survey design and data sources. The "Summary of Survey Methodology" contains information on sampling techniques and survey administration. A "Glossary of Terms" closes the introduction.

***Section II,* WORKER TRAVEL PATTERNS,** provides detailed tabular and graphic presentations of survey data describing worker commute patterns. This section details travel *to* and *from* work including average vehicle ridership (AVR), commuter mode splits, and non-commute travel information.

***Section III,* WORKER TRAVEL BEHAVIOR INFLUENCES AND DETERMINANTS,** includes tables describing travel behavior influences such as cost, time, convenience and others by travel origins and destinations.

Section IV,* EMPLOYER PROGRAMS,** provides survey findings from the "Employer Survey" questionnaire. The "Employer Programs" section delineates alternative workplace schedules and transportation services that businesses use to promote ***transit and ***carpool*** use among employees.

The **APPENDIX** contains supplementary information including samples of the "Employer Survey" and "Employee Survey" instruments.

To clarify particular elements of analysis, portions of the report text are highlighted with typeface changes. Direct references to **Tables** and **Figures** are highlighted in a bold typeface. Specific mode types such as ***drive alone*** and ***transit*** are highlighted in a bold, italic typeface. These highlighted mode types in the text refer to row and column headings in the **Tables**. Due to the many discussions of the commute *to work* and *from work*, the direction of the commute under consideration is highlighted in an italic typeface.

A. SUMMARY OF SURVEY RESULTS

Travel to Work

The survey findings reveal that citywide, about 31% of all San Francisco workers ***drive alone*** to work, 15% ***rideshare***, 46% use ***transit*** and the remaining 8% use ***other modes*** such as walking. There are differences in how workers commute based on where they live:

- ***drive alone*** commuting is greatest among South Bay commuters at 51%;
- ***drive alone*** commuting is lowest among residents from the northeast quadrant of San Francisco (Superdistrict 1) at 15% and the East Bay at 18%;
- ***ridesharing*** is most common among commuters from the East Bay at 23% and the North Bay at 20%;
- ***transit*** use is highest among workers from the East Bay at 57% and among San Francisco resident workers at 43% to 50%;
- ***transit*** use is lowest among commuters from the South Bay at 36% and the North Bay at 38%.

The shares of all travelers using each mode do not correspond to the distribution of San Francisco's workforce by geographic origin:

- East Bay commuters dominate the ***rideshare*** mode, represent 36% of all ***transit*** users, and are only 17% of all those who ***drive alone*** while accounting for one-quarter of the San Francisco workforce;
- South Bay commuters represent 26% of all those who ***drive alone*** and 12% of ***transit*** users while accounting for 16% of the workforce;
- North Bay commuters represent 11% of the totals for both ***drive alone*** and ***carpool*** and 6% of ***transit*** users while accounting for 8% of the workforce;
- San Francisco resident workers represent about 46% of the totals for both ***drive alone*** and ***transit*** and dominate use of ***other*** travel modes including walk, bicycle, and motorbike and account for over half of the workforce.

Differences Based on Land Use

There are substantial differences in commute modal patterns based on land use:

- ***transit*** use for office workers is about twice as high as for workers in other land uses;
- office workers represent 36% of all workers and 58% of all ***transit*** users;
- ***drive alone*** commuting rates among workers at retail, industrial/warehouse, and cultural/institutional work sites are twice as high as among office workers;
- industrial/warehouse workers represent one-third of all ***drive alone*** commuters.

The extent of non-commute travel during the workday also varies based on land use. There are generally more non-commute trips (for business travel, lunch, errands, etc.) among downtown workers than among workers in outlying districts. The highest non-commute trip rates occur among downtown retail workers. In Superdistrict 1, many non-commute trips are made by walking or on *MUNI*, but in the outlying districts over half of the non-commute trips are made by auto.

Average Vehicle Ridership

Survey results show that San Francisco meets the 1999 standards for average vehicle ridership (AVR), or the ratio of the number of employees to the number of private vehicles at worksites, established by the Bay Area Air Quality Management District (BAAQMD). BAAQMD minimum standards are exceeded for both Superdistrict 1 and the rest of the city, for small employers as well as large employers, and on an all day basis as well as the a.m. peak period to which the BAAQMD standard applies. AVR is significantly larger in Superdistrict 1 than in outlying districts, primarily reflecting greater use of ***transit*** *to* and *from* work in Superdistrict 1.

Factors Influencing Modal Choice

Convenience, travel time, and personal safety are consistently identified by commuters as the most important factors influencing modal choices irrespective of work site location, geographic origin of travel, or mode. An examination of factors including travel time, income, auto ownership, and parking cost indicates that the strongest mode choice influences are travel time and income.

Travel time data indicate the following patterns:

- ***transit*** travel times are much longer than travel times for ***drive alone*** and ***rideshare*** among workers who live in San Francisco and the South Bay;
- relatively small differences in travel time between modes exist for East Bay and North Bay commuters;
- over half of all ***transit*** users from Superdistrict 4 and 35% to 44% of those from other San Francisco districts report one-way commute travel times of an hour or more;
- travel times show the strongest correlations with worker mode choices.

Household income data show the following:

- predominant use of ***transit*** irrespective of income;
- greater tendency among higher income workers to ***drive alone*** and ***rideshare***, but 46% of those in the highest income category use transit;
- greater tendency among lower income workers to use ***transit*** and ***other modes***;
- weak correlation between income and mode choice except among East Bay and North Bay commuters.

Less than half of the commuters who have automobiles use them to ***drive alone*** *to work*. There are generally very weak correlations between auto ownership and mode choices.

Almost half of the ***drive alone*** commuters to Superdistrict 1 and over two-thirds of the ***drive alone*** commuters to outlying worksites do not pay for parking. The prevalence of free parking appears to contribute to weak relationships between parking costs and mode choices.

Employer Programs

Employers report that fixed work schedules predominate at industrial/warehouse and office worksites. Staggered shifts are most common at hotel and cultural/institutional worksites. Retail worksites use the most diverse work schedules with over half reporting fixed schedules, one-fourth using staggered shifts, and one-fifth using other arrangements. Less than 2% of employers report use of compressed work schedules. These patterns are generally common among both large and small employers.

Approximately 15% to 25% of all employers already provide one or more services which promote use of commute alternatives. An additional 20% to 25% of local employers express interest in developing commute services. Citywide, over half of all employers indicate lack of interest in providing these programs, with the least interest shown among employers with worksites in outlying districts.

B. PURPOSES OF SURVEY

The CTBS data have three specific purposes. First, the findings document existing travel modes. The travel mode data help refine informational needs for the state-mandated local Trip Reduction Ordinance (TRO). To the greatest extent possible, this survey design anticipates the Bay Area Air Quality Management District (BAAQMD) travel survey information requirements as set forth in Regulation 13, Rule 1. Second, survey data update trip generation and transit demand information necessary for annual reports and a potential reappraisal of the San Francisco Transit Impact Development Fee (TIDF) program. Finally, these survey data increase the existing body of travel behavior information essential to transportation planners, environmental analysts and others who require technical information regarding citywide commute patterns.

C. DESCRIPTION OF THE CTBS SURVEY

1. DEFINITION OF THE SURVEY UNIVERSE

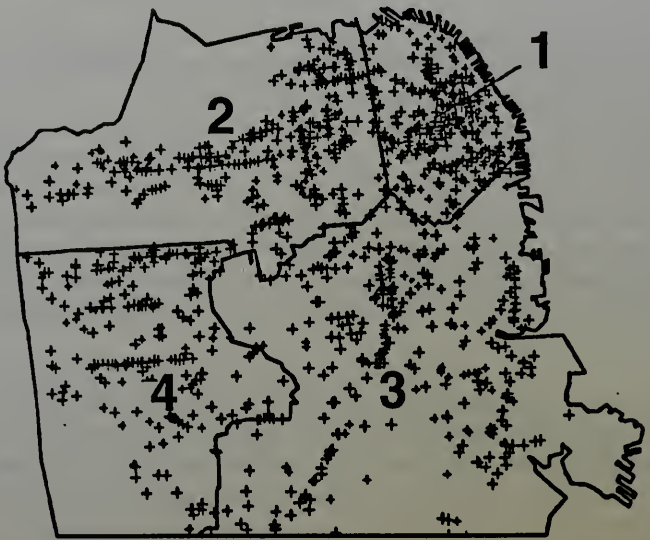
The CTBS identifies employers and civilian employees working within the City and County of San Francisco as the "survey universe." Establishments in this survey universe are segmented by location and employment size. The descriptions of the survey universe in terms of location and size criteria, as well as the associated data sources, follow. Detailed explanations of the CTBS survey methodology are available in the two technical memoranda referenced on page 1 of this report.

a. Survey Universe

The survey universe, from which the statistical sample is drawn, includes all known San Francisco civilian work sites. Work sites are also called "establishments" in this report. Sometimes a single San Francisco address is used for many distinct businesses or government work sites. Each business or government agency at an address is an "establishment." An establishment is therefore a *unique business or government employer location within specified boundaries in the City and County of San Francisco*. The CTBS sample includes establishments randomly selected from the survey universe.

Superdistricts are travel analysis zones established by the Metropolitan Transportation Commission (MTC). These Superdistricts provide a basis for geographic subareas in the universe of San Francisco establishments. **Figure IC1** shows the boundaries of the four MTC Superdistricts for San Francisco and geographic distribution of sampled establishments.

FIGURE IC1
SAN FRANCISCO SUPERDISTRICT BOUNDARIES AND LOCATION OF SAMPLE ESTABLISHMENTS, 1992



An "employee" is *any person on the June 1, 1992 payroll at a specific San Francisco establishment.* The survey sample includes establishments randomly selected from the universe. The term "worker" is used throughout the report interchangeably with "employee" to minimize confusion between the terms "employer" and "employee."

b. Data Sources

The San Francisco Office of the Controller's March 1992 records list all businesses legally operating in the City. This file contains records for approximately 62,000 establishments. From this original data set, the CTBS universe eliminates approximately 10,000 records because they represent businesses operating in San Francisco that have addresses outside the City. Approximately 12,000 apartment buildings in the original listing are also eliminated from the universe due to their lack of on-site employment.

Government offices do not file local business taxes and therefore are not part of the data set obtained from the Controller. An extensive CTBS search and collection of government office information, from governmental directories and the telephone book, supplements the universe. This collection of government office information adds approximately 600 government establishments to the database. Additional data from a commercial marketing service complete the sources defining the survey universe.

c. Employer and Employee Survey Instruments (also see APPENDIX)

The "Employer Survey" contains three parts. The first part, "Description of Employer and Employees," is composed of ten questions. The second part, "Work Place Schedules," includes one question that details the work hours at the establishment. Finally, the "Transportation Services" section asks seven questions about commute alternatives and on-site parking. This questionnaire requires the establishment contact person to respond to a total of 17 questions.

Some formulas and data analysis require both employer and worker survey responses. For example, employers report the number of workers that they employ, the area in square feet in use by the establishment and principal land uses. These employer responses are used in conjunction with the worker responses to calculate mode splits and non-commute trip rates for land use activities.

The "Employee Survey" also contains three parts. The first section asks ten questions on travel patterns "To and From Work." A second section, "Your Commute," asks another eleven questions. The third and final section, "About Yourself," completes the 36 question survey instrument. This questionnaire asks for information on a worker's commute travel, number of vehicles in the household, parking costs, transit use, travel preferences and other activities.

D. SUMMARY OF SURVEY METHODOLOGY

1. SAMPLING TECHNIQUES

Survey procedures and design demand a randomly selected and statistically representative sample of San Francisco establishments. The sample reflects a representative cross-section of the entire survey universe. Survey responses permit citywide and Superdistrict level analysis of commute patterns and transportation related activities. The general procedures for drawing the CTBS sample combine the three sampling techniques described below. A more detailed explanation of the survey methodology is available in the two technical memoranda referenced on page 1 of this report.

a. Stratification by Superdistrict and Employment Size

The CTBS divides the survey universe into the four San Francisco Superdistricts and by establishment size. This categorization by size and geographic location is called "stratification." Sample sizes from each stratified group are large enough to statistically represent each district and size classification separately. The sample first stratifies the survey universe into two subpopulations according to large (i.e., with 100 or more employees) and small (i.e., with 99 or fewer employees) establishment size classifications. Following stratification by size classification, random samples are drawn from each Superdistrict. Each Superdistrict sample therefore contains geographically representative samples of both small and large employers.

b. Cluster Sampling of Employees

Workers are surveyed from the random sample of establishments. All workers at an establishment form a cluster of employees. The survey of workers at a randomly selected establishment therefore represents a cluster sample of employees.

2. SAMPLE SIZE AND SURVEY CONFIDENCE LEVELS

Required sample sizes are determined by the total number of employers and workers in the city, previously determined mode splits, and the target confidence level (i.e., 95% plus or minus 3%). A target sample of 410 employer responses was exceeded with the return of 442 employer responses. In an attempt to achieve the target number of worker responses, the CTBS project distributed approximately 22,250 employee surveys. The actual number of 6,830 completed employee surveys assures an error of (plus or minus) 4% at a 95% confidence level. This means that 95% of the time, the analytical statements contained in this report are within 4% of the actual characteristics of the San Francisco workforce.

3. SURVEY ADMINISTRATION

a. Pre-Contact by Mayor

The Mayor actively encouraged business participation in this survey project. Before sample selection, a press release from the Office of the Mayor was issued to local newspapers and business publications describing the CTBS project and encouraging local business participation. After the sample of local establishments had been drawn, all employers in the sample were mailed a letter from the Mayor emphasizing the importance of each employer and employee response.

b. Consultant Contact

Within one week after receipt of the Mayor's letter, the consultant firm of Nelson\Nygaard began a phone contact program with the employers. Phone calls to these employers asked willing survey participants questions concerning the number of employees and the special language needs of their employee populations.

Once an establishment identified the personnel responsible for survey distribution and collection of worker surveys, a packet of surveys was sent by messenger to the employer. The survey packets delivered to participating San Francisco employers included:

- a cover letter (in either English or Spanish),
- a set of Survey Instructions (in either English or Spanish),
- an Employer Survey instrument (in either English or Spanish),
- a set of Employee Surveys (in some combination of English, Spanish or Chinese as requested by the employer).

Following completion of the surveys, each employer called Nelson/Nygaard to pick up the completed questionnaires. These employer and employee responses were then included in the database for analysis.

E. GLOSSARY OF TERMS

Annual Income:	Total 1991 gross income earned by all members of a San Francisco worker's household.
Average Vehicle Ridership (AVR):	The ratio of the number of employees (workers) to the number of private, motorized, non-transit vehicles that those workers use.
Commute Stops:	Stops made by San Francisco workers during their commute trip *to work* or *from work* in San Francisco.
Commute Time:	The length of time it takes for San Francisco workers to travel from their homes (trip origin) *to* their place of work in San Francisco.
Employee:	Any working person on the June 1, 1992 payroll at a specific San Francisco establishment. In this report, the term "worker" is commonly used instead of "employee".
Employer:	A unique business or government located within the boundaries of the City and County of San Francisco that employs the services and skills of individuals in exchange for a regular source of income.

Establishment:	A unique business or government employer location within the specified boundaries of the City and County of San Francisco.
Establishment Size:	The sizes of establishments located within San Francisco based on the number of employees. Establishments are divided into two size categories: those with fewer than 100 employees and those with 100 employees or more.
Factor Rankings:	San Francisco workers' ranking of influences on their commute mode choices.
Household:	A group of people residing at the same address on January 1, 1992.
Intermediate Commute Stops:	Stops made by workers during their commute travel *to* or *from* San Francisco worksites.
Land Use Activities:	The principal type of economic activity occurring at a work site. For the CTBS project these activities include Office, Retail, Industrial/Warehouse, Hotel, and Cultural/Institutional uses.
Mode:	A means of transportation used by workers for travel (e.g., ***transit***).
Primary Mode:	The means of transportation used for a San Francisco worker's commute three or more times per week.
Secondary Mode:	The means of transportation used for a San Francisco worker's commute two or fewer times per week.
Mode Split:	A distribution of mode types expressed in percentages.
Non-Commute Travel:	Travel by workers that is not associated with the commute *to work* or *from work.*
Non-Commute Trip Rate:	The number of trips per 1,000 square feet of work site floor area that workers make after arriving at and before leaving work.
Parking Costs:	The daily parking cost for San Francisco workers.
Superdistrict:	A geographic zone established by the Metropolitan Transportation Commission (MTC) for travel analysis. There are four superdistricts in San Francisco.

Survey Week:	A seven-day period for which San Francisco workers described their travel behavior. These seven-day periods occurred during the months of July and August of 1992.
Trip Origin:	The regions identified by San Francisco workers as the origin of their commute trip *to work* in San Francisco. Trip origins are reported by zip code and then aggregated into eight geographic regions. These regions include four San Francisco Superdistricts, three Bay Area regions and an "other" category. All origins are described in the Appendix.
Worker:	Any working person on the June 1, 1992 payroll at a specific San Francisco establishment.
Work Site:	A unique business or government employer location within the specified boundaries of the City and County of San Francisco.

II. WORKER TRAVEL PATTERNS

The following sections of this CTBS report provide detailed tabular and graphic presentations of survey data on worker commute patterns. The text briefly summarizes highlights from each table and figure.

The primary focus is on modal patterns for commute travel by the San Francisco workforce. Data are presented for both primary modes, which are the travel modes used three or more times weekly, and secondary modes, which represent travel modes used less frequently. Mode split data are presented for travel *to work* as well as travel *from work.*

Mode splits are shown in the aggregate for all San Francisco workers and then disaggregated to show differences based on worker's places of residence. For each travel mode, the relative share of all users from each geographic area is compared to the relative share of the workforce living in each area.

Because commute mode choices can be influenced by intermediate stops made on the way *to* and *from* work, the detailed discussion of modal patterns is followed by an investigation of the purposes for intermediate stops and the corresponding modes used.

In addition to modal differences based on trip origin and intermediate purpose stops, there are also differences related to land use. Mode split data are presented for each principal land use. Trip rates based on land use are also developed, as well as the extent of use of each mode for worker non-commute travel.

Data are then presented that show the average person occupancy per rideshare vehicle. Finally, calculations are made regarding average vehicle ridership (AVR) for San Francisco to address the requirements of the Bay Area Air Quality Management District (BAAQMD).

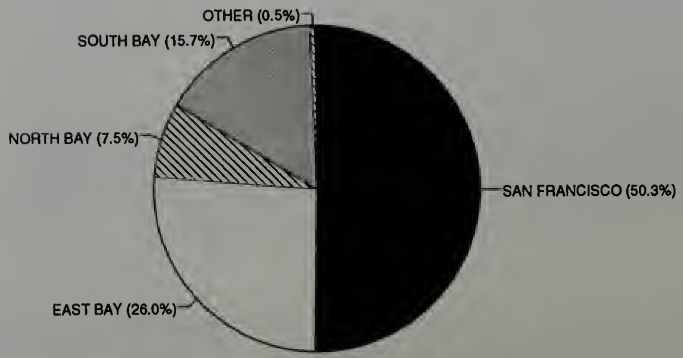
A. DISTRIBUTIONS OF SAN FRANCISCO WORKFORCE BY COMMUTE ORIGINS

TABLE IIA1
PERCENTAGES OF SAN FRANCISCO CIVILIAN EMPLOYMENT BY WORKER ORIGIN, 1992

	TRIP ORIGIN								
	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	OTHER	TOTAL
PERCENTAGE OF WORKERS	8.9%	15.6%	16.1%	9.9%	26.0%	7.5%	15.7%	0.5%	100.0%

Table IIA1 and **Figure IIA1** provide data on the distribution of civilian workers by the origin of their commute *to work*. This table shows that over half of all San Francisco workers reside in the City. Most of these San Francisco resident workers begin their commutes from either Superdistrict 2 or Superdistrict 3. More than one out of four workers in San Francisco begins the commute trip *to work* from the East Bay. Commuters from the South Bay account for about 16% of the San Francisco workforce. North Bay commuters account for less than 8% of the total number of civilians working in San Francisco.

FIGURE IIA1
GEOGRAPHIC SHARES OF THE SAN FRANCISCO CIVILIAN WORKFORCE, 1992



The California Employment Development Department (EDD) 1992 data reported a total of 543,760 civilian workers employed in San Francisco. The 1992 Citywide Travel Behavior Survey (CTBS) findings approximate percentages of workers by origin of commute to San Francisco. Using 1992 EDD total San Francisco employment figures and CTBS percentages of San Francisco workers by place of commute origin, **Table IIA2** approximates the total numbers of workers by commute origin.

TABLE IIA2
ESTIMATED NUMBER OF SAN FRANCISCO WORKERS BY PLACE OF RESIDENCE, 1992

TRIP ORIGIN	NUMBER OF CIVILIAN WORKERS
SUPERDISTRICT 1	43,394
SUPERDISTRICT 2	84,825
SUPERDISTRICT 3	87,544
SUPERDISTRICT 4	53,831
EAST BAY	140,297
NORTH BAY	40,781
SOUTH BAY	85,369
OTHER	2,719
TOTAL	543,760

B. DISTRIBUTION OF WORKERS BY COMMUTE TRIP ORIGINS

During the survey months of July and August 1992, workers described in detail the modes of transportation used during each day of a seven-day commute period. The seven-day travel descriptions by each worker make up the survey week for that worker. This survey week includes a five-day work week used in the following CTBS analysis. The following portions of this section present survey findings on workers' five day work week mode choices during their commutes *to* and *from* San Francisco worksites.

The CTBS "Employee Survey" design enables documentation of worker travel *to* and *from work* over the course of the work week. Both primary and secondary mode choices are derived from worker responses. A primary mode indicates a worker's commute choice repeated three or more times during the work week. A secondary mode indicates a worker's commute choice that was used two or fewer times during the work week.

1. PRIMARY AND SECONDARY MODE CHOICES BY TRIP ORIGIN

Many transportation professionals emphasize that commuters do not always use the same modes every day for travel and may not use the same modes for travel *to work* as for travel *from work.* Traditional survey forms which allow respondents to indicate only a single "typical" travel mode may significantly overstate or understate the actual extent of use of particular modes. The CTBS survey instrument design allows respondents to indicate variability in commute travel mode choices over the course of a week. This section presents commute characteristics by primary and secondary modes of travel. In the presentation of detailed modal data in the following sections of this report, findings are shown for both primary modes and secondary modes as well as for travel *to work* and travel *from work.*

Table IIB1 presents CTBS findings on the percentages of primary and secondary mode choice data by commute origin. These percentages represent a total of all commute trips *to work* from various Bay Area origins during the survey week and provide the proportional breakdowns of those trips by primary and secondary mode trips.

TABLE IIB1
PRIMARY AND SECONDARY COMMUTE MODES BY WORKER ORIGIN, 1992

MODE	PERCENTAGE OF WORKERS BY MODE							
	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	OTHER
PRIMARY	84.1%	76.0%	81.2%	83.0%	80.1%	70.9%	86.7%	67.2%
SECONDARY	15.9%	24.0%	18.8%	17.0%	19.9%	29.1%	13.3%	32.8%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

These data show that over 80% of all commute trips *to work* from most origins use a primary modal pattern. Trips originating in Superdistrict 2 have a 76% primary modal pattern. North Bay commuters show a 71% primary modal pattern. Superdistrict 2 and North Bay commutes show the most variability in primary and secondary modal patterns. Most commuters show a relatively fixed commute pattern. A substantial minority of all commute trips is part of a secondary modal pattern. This variability in primary and secondary commuter travel is part of the reason for daily differences in the numbers of workers using automobiles, transit and other modes.

2. COMMUTE TO WORK: MODE USE DISTRIBUTIONS BY TRIP ORIGIN

A total modal split for workers commuting *to work* in San Francisco is presented in **Figure IIB1** and **Table IIB2**. Survey findings show that almost half of all San Francisco workers use ***MUNI*** or other transit carriers for their commute *to work*. ***MUNI*** carries 21% and East Bay ***BART*** serves another 13% of the San Francisco workforce. Approximately three out of ten San Francisco workers ***drive alone*** *to work*. The percentage of workers commuting *to work* by ***carpool*** is less than half the percentage of ***drive alone*** commuters.

FIGURE IIB1
SAN FRANCISCO WORKER COMMUTE MODE SHARES, 1992

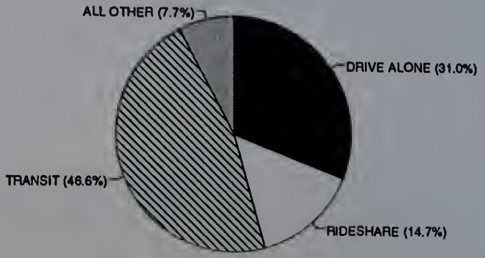


TABLE IIB2
PRIMARY COMMUTE MODE CHOICE TO WORK FOR SAN FRANCISCO WORKERS, 1992

MODE	TO WORK
DRIVE ALONE	31.0%
CAR POOL	13.2%
VAN POOL	1.5%
FERRY	0.8%
WALK	5.0%
BICYCLE	0.8%
MOTORBIKE	1.2%
OTHER	0.7%
SAMTRANS	2.1%
MUNI	21.0%
AC TRANSIT	2.0%
GG TRANSIT BUS	2.3%
EASTBAY BART	13.1%
PENINSULA RAIL - BART/CALTRAIN	2.6%
PENINSULA RAIL/MUNI COMBO	1.0%
SUPERDISTRICT 3 WHO BART/MUNI	0.8%
FERRY/MUNI	0.1%
BART/MUNI	0.8%

a. Primary Mode Choices To Work

Evaluating mode splits by worker origin permits comparisons between the commute patterns of each location. **Table IIB3** below provides mode splits for the primary commute choices by trip origin. These data show that primary commute choices of workers from Superdistricts 1 and 2, as well as workers from the East Bay, each has smaller proportions of ***drive alone*** commuters than the total mode split in **Table IIB2.** Workers from all other locations have higher percentages of ***drive alone*** commuters than the total mode split figures.

One-third of all commuters from Superdistrict 1 *walk to work*, 42% use ***MUNI***, and only 15% ***drive alone.*** Nearly half of the workers from Superdistrict 2 commute *to work* on ***MUNI***, and roughly a quarter drive alone. ***Transit*** shares, primarily aboard ***MUNI***, for workers from Superdistricts 3 and 4 are 38% and 44%, respectively, but another 36% of these resident commuters ***drive alone*** *to work.*

Half of the workers from the East Bay select ***BART*** as their primary commute mode, and another 7% use ***AC Transit.*** Twenty-three percent of East Bay commuters ***rideshare*** *to work*, while only 18% ***drive alone. Drive alone*** and ***Golden Gate*** (***bus*** and ***ferry***) users each represent about 40% of all commuters from the North Bay, with about 20% ***ridesharing.*** About half of all South Bay workers ***drive alone*** *to work* in San Francisco, 11% ***rideshare***, and 36% use a variety of transit modes.

TABLE IIB3
PRIMARY MODE CHOICE TO WORK FOR SAN FRANCISCO WORKERS BY COMMUTE ORIGIN, 1992

MODE	TRIP ORIGIN							
	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	OTHER
DRIVE ALONE	14.7%	28.2%	36.2%	36.3%	18.3%	40.9%	51.3%	33.9%
CAR POOL	4.9%	8.9%	10.5%	14.0%	18.7%	19.4%	11.4%	24.3%
VAN POOL	0.4%	0.0%	0.1%	1.1%	4.2%	0.6%	0.2%	16.6%
FERRY				0.2%	0.8%	6.6%		6.3%
WALK	31.4%	8.7%	4.9%	1.8%			0.1%	10.6%
BICYCLE	1.2%	1.5%	2.0%	0.4%	0.1%	0.1%	0.1%	4.7%
MOTORBIKE	2.1%	2.2%	2.6%	1.2%	0.1%	0.7%	0.6%	
OTHER	3.5%	0.7%	0.7%	0.7%	0.2%	0.1%	0.5%	4.7%
SAMTRANS							13.0%	
MUNI	41.9%	49.8%	38.2%	44.2%				
AC TRANSIT					7.1%			
GG TRANSIT BUS						30.4%		
EASTBAY BART					47.4%			
PENINSULA RAIL- BART/CALTRAIN							16.2%	
PENINSULA RAIL/MUNI COMBO							6.6%	
SUPERDISTRICT 3 WHO BART/MUNI			4.8%					
FERRY/MUNI						1.3%		
BART/MUNI					3.0%			
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

FIGURE IIB2
PRIMARY MODE SPLIT DISTRIBUTION FOR RESIDENT SAN FRANCISCO WORKERS, 1992

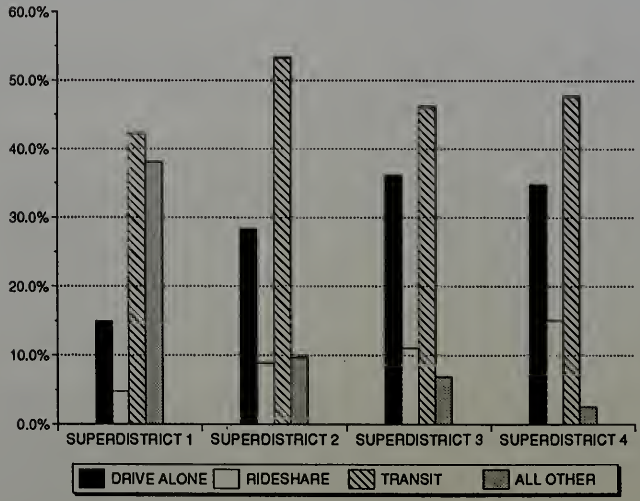


FIGURE IIB3
PRIMARY MODE SPLIT DISTRIBUTION FOR WORKERS WHO COMMUTE TO SAN FRANCISCO, 1992

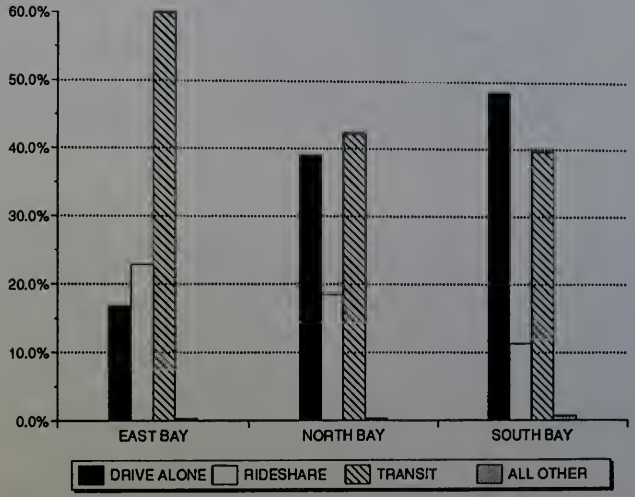
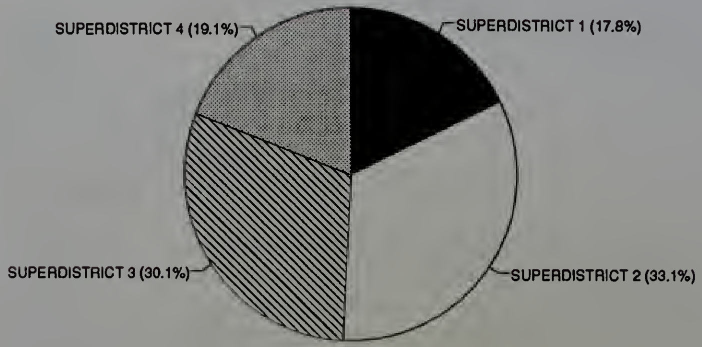


FIGURE IIB4
RESIDENT WORKER SHARES OF MUNI RIDERSHIP TO WORK, 1992



Primary mode choice data for travel *to work* are also disaggregated in the Appendix to show differences between Superdistrict 1 work sites and work sites in outlying districts. ***Transit*** mode splits are substantially greater and ***drive alone*** mode splits are much less for Superdistrict 1 work sites than for work sites in Superdistricts 2, 3 and 4. ***Transit*** use to Superdistrict 1 work sites among commuters into the city ranges from 65% from the East Bay to 56% from the North Bay and South Bay. Among resident workers, the range is 67% from Superdistrict 2 to 42% from Superdistrict 1, with walking accounting for another 39% of work travel within Superdistrict 1. The ***drive alone*** mode split to Superdistrict 1 work sites varies from 9% from Superdistrict 1 and 11% from the East Bay to 32% from the South Bay.

For travel to work sites in Superdistricts 2, 3 and 4, the ***drive alone*** mode split ranges from 73% from the South Bay to 28% from Superdistrict 1. ***Transit*** use accounts for 42% from Superdistrict 1, 11% and 12% from the North Bay and South Bay, respectively, and clusters in the 21% to 27% range from other origins. The extent of ***ridesharing*** from all origins is uniformly greater to outlying districts than to Superdistrict 1 work sites.

b. Secondary Mode Choices To Work

As discussed above, primary mode choices are the dominant mode choices irrespective of commute origin. **Table IIB4** details the secondary mode choices for San Francisco workers. Commuters from all origins, however, indicate ***drive alone*** as the dominant secondary mode choice. A ***drive alone*** secondary mode choice is much higher than for the primary mode choice for commutes originating in Superdistricts 1 and 2 and the East Bay. The secondary mode ***drive alone*** shares from all other origins are similar. The extent of ***ridesharing*** for the secondary mode choice is greater than for the primary mode choice for all workers from San Francisco Superdistricts and the South Bay. Similar primary and secondary mode choice shares are evident for commuters from the North Bay and East Bay.

The ***MUNI*** secondary mode choice is less than its primary mode choice in all San Francisco Superdistricts. ***Transit*** use from all other origins as secondary mode choice is also less than for primary mode. The most striking difference is for East Bay ***BART***, which accounts for 49% of the primary mode but only 22% of the secondary mode.

TABLE IIB4
SECONDARY MODE CHOICE TO WORK FOR SAN FRANCISCO WORKERS BY COMMUTE ORIGIN, 1992

MODE	TRIP ORIGIN							
	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	OTHER
DRIVE ALONE	21.8%	34.5%	28.3%	34.6%	43.9%	38.0%	42.0%	50.0%
CAR POOL	16.3%	13.6%	18.3%	16.0%	19.0%	20.6%	18.1%	25.0%
VAN POOL	0.6%	1.1%		2.3%	1.0%	0.3%		
FERRY	1.3%	0.5%	0.3%		1.0%	13.2%		
WALK	15.6%	8.4%	8.0%	1.7%	0.6%	0.7%	1.7%	14.1%
BICYCLE	3.7%	3.0%	4.1%	2.1%	0.1%	2.4%	1.1%	
MOTORBIKE	4.8%	2.3%	4.4%	2.1%	1.1%	1.8%	2.1%	
OTHER	4.9%	4.5%	3.0%	6.6%	1.9%	0.9%	0.1%	10.9%
SAMTRANS							12.5%	
MUNI	31.1%	32.2%	29.0%	34.5%				
AC TRANSIT					6.5%			
GG TRANSIT BUS						20.1%		
EASTBAY BART					22.0%			
PENINSULA RAIL- BART/CALTRAIN							14.5%	
PENINSULA RAIL/MUNI COMBO							7.9%	
SUPERDISTRICT 3 WHO BART/MUNI			4.5%					
FERRY/MUNI					0.1%	2.0%		
BART/MUNI					2.9%			
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

There is a dominance of a secondary ***drive alone*** mode choice from all origins. After ***drive alone***, the most common secondary mode choice for workers from Superdistricts 3 and 4 is ***MUNI***. Similarly, the most common secondary mode choice from Superdistrict 1 and 3 after ***MUNI*** is ***drive alone***. Excluding ***drive alone*** secondary choices, workers from the North Bay and the South Bay use ***carpools*** as their most common secondary commute mode. East Bay commuters, while choosing ***drive alone*** as their most likely secondary commute mode, say that ***BART*** is the next most common secondary commute mode.

3. COMMUTE FROM WORK: MODE USE DISTRIBUTIONS BY TRIP DESTINATIONS

Previous research shows some differences in mode choices for the commute *from work* when compared to the commute *to work.* The CTBS questionnaire design allows one to examine the extent of these modal differences. **Table IIB5** presents the total mode splits for the commute *to* and *from work.* There are very few significant differences in the general mode split between the commute *to* and *from work.* The greatest changes between the commute *to* and *from work* are decreases in ***carpools*** and increases in ***drive alone***, East Bay ***BART*** and ***AC Transit*** modes.

a. Primary Mode Choices From Work

In the commute *from work*, most of the primary mode choices workers make parallel the patterns described above in the commute *to work* section. There are, however, some variations between the commute *to work* and the commute *from work.* **Table IIB6** presents the mode splits for the commute *from work* by the destination of the trip.

TABLE IIB5
PRIMARY COMMUTE MODE CHOICE TO AND FROM WORK FOR SAN FRANCISCO WORKERS, 1992

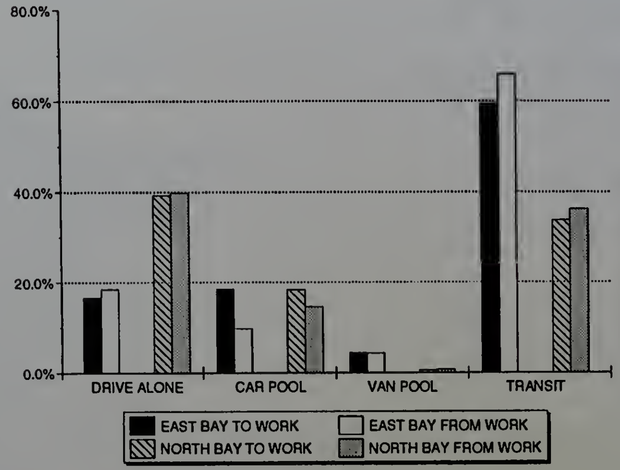
MODE	TO WORK	FROM WORK
DRIVE ALONE	31.0%	31.8%
CAR POOL	13.2%	10.5%
VAN POOL	1.5%	1.4%
FERRY	0.8%	0.8%
WALK	5.0%	5.2%
BICYCLE	0.8%	0.8%
MOTORBIKE	1.2%	1.2%
OTHER	0.7%	0.8%
SAMTRANS	2.1%	1.7%
MUNI	21.0%	21.9%
AC TRANSIT	2.0%	2.7%
GOLDEN GATE TRANSIT BUS	2.3%	2.3%
EASTBAY BART	13.1%	13.8%
PENINSULA RAIL - BART/CALTRAIN	2.6%	2.8%
PENINSULA RAIL/MUNI COMBO	1.0%	0.2%
SUPERDISTRICT 3 WHO BART/MUNI	0.8%	0.8%
FERRY/MUNI	0.1%	0.4%
BART/MUNI	0.8%	0.8%

TABLE IIB6
PRIMARY COMMUTE MODE CHOICE FROM WORK IN SAN FRANCISCO BY WORKER TRIP DESTINATION, 1992

MODE	TRIP DESTINATION							
	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	OTHER
DRIVE ALONE	13.4%	28.3%	36.7%	36.3%	20.4%	41.5%	51.6%	33.9%
CAR POOL	4.5%	6.4%	10.6%	14.7%	10.0%	15.6%	11.4%	
VAN POOL		0.3%	0.1%	0.9%	4.2%	0.6%	0.2%	16.6%
FERRY		0.1%		0.2%	0.7%	7.2%		
WALK	31.4%	10.9%	4.5%	2.2%	0.2%		0.2%	10.6%
BICYCLE	2.1%	1.2%	1.9%	0.5%	0.2%	0.3%	0.1%	4.7%
MOTORBIKE	1.8%	2.3%	2.6%	1.2%	0.1%	0.7%	0.6%	
OTHER	2.3%	1.6%	0.7%	0.7%	0.3%	0.1%	0.3%	4.7%
SAMTRANS							10.9%	
MUNI	44.6%	46.9%	37.7%	43.4%	1.4%		5.7%	
AC TRANSIT					9.7%			
GG TRANSIT BUS						30.6%		
EASTBAY BART					49.4%			
PENINSULA RAIL- BART/CALTRAIN							17.6%	
PENINSULA RAIL/MUNI COMBO							1.3%	
SUPERDISTRICT 3 WHO BART/MUNI			5.1%					
FERRY/MUNI					0.4%	3.1%		6.9%
BART/MUNI					3.1%			
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Commuters generally use the same modes going *to* and *from work*, as shown in **Table IIB3** and **Table IIB6**. There are, however, decreases in commute *from work* ridesharing among East Bay and North Bay residents. Compared to the ***carpool*** commute *to work*, half as many people bound for the East Bay use a ***carpool*** when leaving work. The commute home pattern to the East Bay shows increases in the percentages of workers who ***drive alone*** and use ***AC Transit*** or ***BART***. This pattern appears to reflect casual carpooling. The casual carpools occur when automobile users pick up passengers at transit stops on their way *to work* to take advantage of the ***carpool*** incentives on the Bay Bridge. As in the East Bay, more ***carpools*** leave the North Bay *to work* in San Francisco than return *from work*. In the North Bay, however, some people who ***carpool to work*** return *from work* using a combined ***MUNI/FERRY*** mode.

FIGURE IIB5
COMPARISON OF NORTH AND EAST BAY COMMUTE MODES TO AND FROM WORK, 1992



b. Secondary Mode Choices From Work

Many similarities exist in the secondary commute choices *to* and *from work*, as shown in **Table IIB4** and **Table IIB7**. Differences are nonetheless apparent here. Differences for all San Francisco Superdistricts include the secondary ***MUNI*** share being less *from work* than the secondary ***MUNI*** share *to work*.

There are also differences in the ***ridesharing*** mode. ***Ridesharing*** as a secondary mode choice *from work* is greater in all four San Francisco Superdistricts than ***ridesharing*** *to work*. These increases in ***ridesharing*** *from work* suggest that some San Francisco resident workers who use ***MUNI*** going *to work* ride home with others at the end of the work day. Another contrast is that fewer Superdistrict 1 residents ***walk*** *from work* than ***walk*** *to work*.

TABLE IIB7
SECONDARY COMMUTE MODE CHOICE FROM WORK FOR SAN FRANCISCO WORKERS, 1992

MODE	TRIP DESTINATION							
	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	OTHER
DRIVE ALONE	17.9%	31.3%	30.5%	34.5%	43.1%	39.2%	39.1%	70.4%
CAR POOL	22.9%	15.4%	21.3%	21.5%	17.1%	25.7%	21.7%	18.7%
VAN POOL		1.0%		1.0%	1.4%		1.1%	
FERRY			0.3%	1.3%	0.8%	12.4%		
WALK	16.1%	8.7%	8.3%	2.8%	0.8%	1.1%	0.9%	
BICYCLE	3.1%	2.2%	3.9%	1.9%	0.2%	1.9%		
MOTORBIKE	3.6%	2.3%	3.9%	1.0%	0.6%	1.2%	1.1%	
OTHER	10.3%	9.4%	4.4%	3.3%	2.2%	0.3%	1.1%	12.9%
SAMTRANS							12.2%	
MUNI	28.1%	29.8%	26.0%	32.6%	2.8%		7.1%	
AC TRANSIT					5.7%			
GG TRANSIT BUS						15.6%		
EASTBAY BART					20.5%			
PENINSULA RAIL- BART/CALTRAIN							12.0%	
PENINSULA RAIL/MUNI COMBO							3.8%	
SUPERDISTRICT 3 WHO BART/MUNI			1.5%					
FERRY/MUNI					0.9%	2.7%		
BART/MUNI					4.0%			
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

4. SUMMARY OF MODE USE DISTRIBUTIONS BY TRIP ORIGIN

The principal findings about mode splits are as follows:

- overall mode splits among San Francisco workers are 31% ***drive alone***, 15% ***rideshare***, 47% ***transit***, and the remainder use *other modes*;
- South Bay commuters have the greatest ***drive alone*** mode split at 51% and the least use of ***transit*** at 36%;
- East Bay commuters have the greatest mode split for ***transit*** at 58% and the least use of ***drive alone*** commuting at 18%;
- ***drive alone*** and ***transit*** account for 41% and 32% respectively among North Bay commuters;
- among San Francisco resident workers ***transit*** mode splits range from 42% to 50%, ***drive alone*** accounts for one-quarter to one-third of worker travel originating outside Superdistrict 1, and one-third of commuters from Superdistrict 1 walk to work;
- mode splits are generally similar for travel *to work* and travel *from work*, with the exceptions that there is less ***ridesharing*** and greater ***transit*** use for travel *from work* among East Bay and North Bay commuters;
- ***drive alone*** is more often chosen as a secondary mode choice than as a primary mode choice, especially for commutes from the East Bay and Superdistricts 1 and 2, and ***transit*** is chosen less often as a secondary mode choice.

C. SHARE OF EACH MODE TOTAL BY WORKER RESIDENCE

This section describes mode use by place of worker origin. In this analysis, each row of data in the following **Tables** presents the percentages of all workers using a specific commute mode by worker origin. Mode uses by workers from a specific origin are compared to the total contribution each origin makes to the San Francisco workforce (**Table IIC1**). These comparisons reveal where there are disproportionate uses of a commute mode by worker origin. Many of the disproportionate uses highlighted here indicate that there are geographic differences in the availability of commute alternatives.

The organization of the discussion in the following sections of the report parallel findings for modal splits. The previous sections show modal splits for each major geographic area from which San Francisco's workforce is drawn. Subsequent sections focus on the shares of each travel mode from each major geographic area. Geographic shares for each travel mode indicate relative proportions when compared to the share of all San Francisco jobs which each geographic area accounts for. The comparisons in the next sections of the report reveal which geographic areas account for disproportionate shares of each travel mode.

For example, half of all commuters from one geographic area may use ***transit***; ***transit*** users from this geographic area may represent 30% of all ***transit*** users among the entire San Francisco workforce. If workers who live in this geographic area represent 15% of the San Francisco workforce, then ***transit*** use among these workers is disproportionately high. If 45% of all San Francisco workers live in this geographic area, then ***transit*** use among these workers is disproportionately low. In this example, the 50% ***transit*** mode split indicates the extent of all commute travel captured by ***transit*** in the local geographic area; the 30% share of all ***transit*** users among San Francisco workers indicates its relative importance in the overall context of all work travel in San Francisco.

1. GEOGRAPHIC SHARES OF COMMUTE TO WORK MODE CHOICES

Table IIC1 provides a percentage distribution of San Francisco workers by origin. The other tables in this section highlight differences between the geographic distribution of the San Francisco workforce and the corresponding geographic use of each mode.

a. Geographic Shares of Primary Mode Choices to Work

Workers from all four San Francisco Superdistricts fill just over half all San Francisco jobs (**Table IIC1**), yet these resident workers account for less than half of all the ***drive alone*** commuters (**Table IIC2**). While the total share of resident workers and East Bay commuters who ***drive alone*** is less than the total share of residents working in the City, the opposite is the case for workers who commute from the South Bay and the North Bay.

Of all those who ***drive alone to work*** in San Francisco, 26% are commuting from the South Bay. This total ***drive alone*** share compares with the South Bay 16% share of the San Francisco workforce (**Table IIC1**) and shows that South Bay represents a disproportionately large share of ***drive alone*** commuters. By contrast, East Bay commuters make up 26% of all San Francisco workers, but account for only 16% of all ***drive alone*** commuters. A closer match of geographic workforce shares to ***drive alone*** commute shares is found in the North Bay. North Bay commuters fill less than 8% of all local jobs while comprising nearly 10% of all ***drive alone*** commuters ***to*** San Francisco.

TABLE IIC1
PERCENTAGES OF SAN FRANCISCO CIVILIAN EMPLOYMENT BY WORKER ORIGIN, 1992

	TRIP ORIGIN								TOTAL
	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	OTHER	
PERCENTAGE OF WORKERS	8.9%	15.6%	16.1%	9.9%	26.0%	7.5%	15.7%	0.5%	100.0%

TABLE IIC2
GEOGRAPHIC SHARES OF PRIMARY COMMUTE MODES TO WORK, 1992

MODE	TRIP ORIGIN								TOTAL
	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	OTHER	
DRIVE ALONE	4.2%	12.5%	19.5%	10.7%	16.4%	9.9%	26.4%	0.4%	100.0%
CAR POOL	3.3%	9.3%	13.3%	9.7%	39.1%	11.0%	13.7%	0.8%	100.0%
VAN POOL	2.3%	0.3%	0.6%	7.1%	79.9%	2.6%	2.6%	4.7%	100.0%
TRANSIT	8.0%	14.7%	15.4%	6.7%	34.7%	6.2%	12.3%	0.1%	100.0%
MUNI	17.9%	32.6%	30.3%	19.3%					100.0%
FERRY				2.8%	30.2%	64.2%		2.6%	100.0%
FERRY/MUNI					8.6%	91.3%			100.0%
WALK	55.7%	23.7%	16.2%	3.3%			0.2%	0.9%	100.0%
BICYCLE	14.7%	27.0%	44.0%	5.4%	2.9%	1.2%	2.5%	2.5%	100.0%
MOTORBIKE	15.4%	24.5%	36.3%	6.7%	2.7%	4.4%	6.1%		100.0%
OTHER	41.6%	13.0%	16.5%	6.7%	5.8%	1.2%	10.6%	2.6%	100.0%
PERCENTAGE OF WORKERS	8.9%	15.6%	16.1%	9.9%	26.0%	7.5%	15.7%	0.5%	100.0%

TABLE IIC3
GEOGRAPHIC SHARES OF SECONDARY COMMUTE MODES TO WORK, 1992

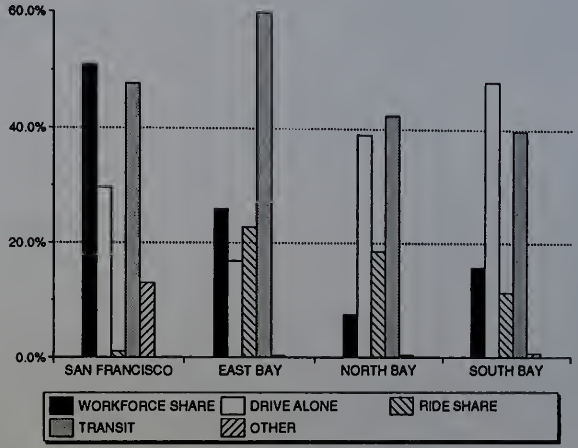
MODE	TRIP ORIGIN								TOTAL
	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	OTHER	
DRIVE ALONE	4.1%	16.6%	12.2%	7.2%	33.9%	13.1%	11.6%	1.1%	100.0%
CAR POOL	6.4%	13.7%	16.4%	7.0%	30.4%	14.7%	10.4%	1.2%	100.0%
VAN POOL	5.3%	26.3%		24.6%	36.6%	5.3%			100.0%
TRANSIT	6.7%	17.4%	16.1%	6.0%	27.6%	13.3%	10.6%	0.3%	100.0%
MUNI	14.2%	37.6%	30.4%	17.5%					100.0%
FERRY	4.0%	3.9%	2.3%		13.5%	76.4%			100.0%
FERRY/MUNI					13.1%	86.9%			100.0%
WALK	23.9%	33.0%	28.1%	2.6%	3.9%	2.0%	3.7%	2.5%	100.0%
BICYCLE	12.3%	25.5%	31.7%	6.0%	1.9%	15.0%	5.6%		100.0%
MOTORBIKE	14.1%	17.6%	30.0%	7.0%	12.7%	9.7%	8.9%		100.0%
OTHER	11.9%	28.0%	16.7%	17.6%	18.5%	4.0%	0.3%	3.1%	100.0%
PERCENTAGE OF WORKERS	8.9%	15.6%	16.1%	9.9%	26.0%	7.5%	15.7%	0.5%	100.0%

The 35% share of all ***transit*** use for East Bay commuters is also higher than the East Bay 26% share of the San Francisco workforce. The North and South Bay shares of all ***transit*** users are below their shares of the City workforce. Similarly, San Francisco resident workers account for about 47% of all ***transit*** use and this is less than their share of all jobs. Only ***transit*** use among workers from Superdistrict 3 exceeds their relative share of local jobs.

Commuters from Superdistrict 2 make up one-third of the ***MUNI*** commuters who are San Francisco resident workers. Superdistrict 3 provides 30% of ***MUNI*** commuters, and the shares of Superdistricts 1 and 4 are 18% and 19%, respectively. Almost two-thirds of all ***ferry*** rides *to* San Francisco originate in the North Bay. North Bay ferry commuters often use a ***MUNI*** connection after the ***ferry*** ride and account for 91% of all ***FERRY/MUNI*** connections.

One of the most striking patterns in **Table IIC1** and **Table IIC2** is that East Bay commuters represent nearly 40% of all ***carpoolers*** and over 80% of all ***vanpoolers***. The North Bay also accounts for a disproportionately high share of all ***carpoolers***. North Bay ***vanpool*** shares and the South Bay shares of both ***carpools*** and ***vanpools*** are disproportionately low. San Francisco resident workers account for a disproportionately low one-third share of all ***carpoolers*** and an even lower one-tenth share of all ***vanpoolers***. **Figure IIC1** shows a summary of these results.

FIGURE IIC1
COMPARISON OF SAN FRANCISCO WORKFORCE SHARES TO PRIMARY MODE SHARES, 1992



Primary mode choice data for travel *to work* are also disaggregated in the Appendix to show differences in the distribution by mode between Superdistrict 1 work sites and work sites in outlying districts. 37% of all San Francisco workers who ***drive alone*** work in Superdistrict 1. San Francisco resident workers represent almost half of those who ***drive alone*** to Superdistrict 1. Of all San Francisco workers who use ***transit***, 82% are traveling to Superdistrict 1 work sites. 31% of all San Francisco workers who use ***transit*** commute from the East Bay, and 35% are San Francisco resident workers. 74% of all workers citywide who use ***MUNI*** work in Superdistrict 1, and the shares destined to Superdistrict 1 work sites for other ***transit*** carriers are substantially greater. 80% of all ***vanpoolers*** work in Superdistrict 1, and 68% come from the East Bay.

Drive alone commuters to work sites in Superdistricts 2, 3 and 4 represent 63% of all workers who ***drive alone***. 17% of citywide ***drive alone*** commuters drive from the South Bay to work sites in the outlying districts, and 13% of the total drive to these work sites from Superdistrict 3. Workers who live in Superdistrict 3 represent the greatest share of ***MUNI*** riders who work in the outlying districts. The relative shares of citywide totals for ***carpool***, ***walk***, and ***other*** modes are more evenly split between Superdistrict 1 work sites and work sites in the rest of the city.

b. Geographic Shares of the Secondary Mode Choices to Work

Secondary mode choice data are presented in **Table IIC3** row percentages. Secondary mode shares *to work*, with a few exceptions, are similar to primary mode shares. One difference is that the secondary ***rideshare*** choice for San Francisco resident workers is greater than their primary mode ***rideshare*** choice. Among commuters who do not live in the City, especially those from the East Bay, the primary ***rideshare*** percentage exceeds the secondary ***rideshare*** figure. From the East Bay, the secondary ***drive alone*** mode choice *to work* is more than double the comparable primary mode choice. For all other origins, the relative primary and secondary ***drive alone*** shares are similar.

2. GEOGRAPHIC SHARES OF COMMUTE FROM WORK BY MODE

a. Geographic Shares of Primary Mode Choices From Work

The row percentages in **Table IIC4** provide a breakdown of each mode by the workers' destinations in their commutes *from work*. The CTBS project documents travel behavior for people who work in San Francisco. All workers in this survey, therefore, have San Francisco as the origin of their commute *from work*.

Comparisons of the primary mode choices *to work* and *from work* show very few differences. The greatest differences occur among commuters returning to the East Bay. Reflecting the effects of casual ***carpools*** *to work* and ***transit*** use *from work*, East Bay ***transit*** use *to* and *from work* increases from 35% to 37%, respectively. The 39% East Bay share of workers in ***carpools*** *to work*, however, drops to 23% for comparable travel *from work*. Irrespective of mode or destination, very few other differences are apparent between the primary mode choices *to* and *from work*.

b. Geographic Shares of Secondary Mode Choices From Work

The ***drive alone*** secondary mode choice *from work* is higher than the primary ***drive alone*** mode choice for Superdistrict 2 and East Bay destinations. In comparison to primary shares, ***transit*** secondary mode shares decline for Superdistrict 2 and the East Bay. In the North Bay, the secondary ***ferry*** mode share declines. One other notable difference between secondary and primary mode choices *from work* is in Superdistrict 1. In this downtown Superdistrict, the ***walk*** secondary mode choice is half the primary mode choice *from work*.

3. SUMMARY OF MODE SHARES BY WORKER RESIDENCE

The principal findings concerning geographic shares by mode are as follows:

- San Francisco resident workers represent 46% and South Bay residents represent 26% of all ***drive alone*** commuters;
- San Francisco resident workers account for 47% and East Bay residents account for 35% of all commuters who use ***transit***;
- East Bay residents represent about one-third of all ***carpoolers*** and 80% of all ***vanpoolers***;
- East Bay commuters account for disproportionately high shares of ***transit*** and ***ridesharing*** and a disproportionately low share of ***drive alone***;

TABLE IIC4
GEOGRAPHIC SHARES OF PRIMARY COMMUTE MODES FROM WORK, 1992

MODE	TRIP DESTINATION								
	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	OTHER	TOTAL
DRIVE ALONE	2.6%	13.6%	19.1%	12.7%	15.3%	9.9%	26.3%	0.6%	100.0%
CAR POOL	3.3%	12.9%	18.8%	14.1%	22.5%	11.1%	16.3%	1.0%	100.0%
VAN POOL		6.8%	4.1%	5.4%	71.6%	6.8%	1.4%	4.1%	100.0%
TRANSIT	7.2%	14.8%	14.3%	8.2%	37.3%	6.4%	11.7%	0.1%	100.0%
MUNI	15.2%	32.1%	28.2%	19.2%	2.1%		3.1%		100.0%
FERRY		3.0%		3.0%	24.2%	69.7%			100.0%
FERRY/MUNI					37.5%	56.3%		6.3%	100.0%
WALK	32.7%	37.2%	13.3%	14.2%	0.9%		0.9%	0.9%	100.0%
BICYCLE	13.6%	27.1%	35.6%	13.6%	3.4%	3.4%	1.7%	1.7%	100.0%
MOTORBIKE	9.2%	25.0%	36.8%	9.2%	5.3%	6.6%	7.9%		100.0%
OTHER	17.5%	31.6%	22.8%	10.5%	8.8%	1.8%	5.3%	1.6%	100.0%
PERCENTAGE OF WORKERS	8.9%	15.6%	16.1%	9.9%	26.0%	7.5%	15.7%	0.5%	100.0%

TABLE IIC5
GEOGRAPHIC SHARES OF SECONDARY COMMUTE MODES FROM WORK, 1992

MODE	TRIP DESTINATION								
	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	OTHER	TOTAL
DRIVE ALONE	4.3%	17.9%	14.7%	11.1%	27.6%	12.0%	11.3%	1.1%	100.0%
CAR POOL	7.3%	16.3%	17.7%	12.0%	20.3%	15.0%	11.0%	0.3%	100.0%
VAN POOL		33.3%		6.3%	41.7%		16.7%		100.0%
TRANSIT	6.8%	18.6%	14.2%	9.5%	29.1%	11.7%	9.8%	0.4%	100.0%
MUNI	11.2%	34.4%	26.1%	19.9%	5.0%		3.3%		100.0%
FERRY			4.8%	4.8%	9.5%	61.0%			100.0%
FERRY/MUNI					40.0%	60.0%			100.0%
WALK	16.4%	36.8%	25.3%	12.6%	3.5%	2.3%	1.2%		100.0%
BICYCLE	10.3%	31.0%	37.9%	10.3%	3.5%	6.9%			100.0%
MOTORBIKE	9.7%	25.8%	29.0%	9.7%	12.9%	6.5%	6.5%		100.0%
OTHER	15.9%	34.9%	25.4%	6.4%	11.1%	1.6%	3.2%	1.6%	100.0%
PERCENTAGE OF WORKERS	8.9%	15.6%	16.1%	9.9%	26.0%	7.5%	15.7%	0.5%	100.0%

- South Bay commuters represent a disproportionately high share of ***drive alone*** and a disproportionately low share of ***transit***;
- San Francisco resident shares of both ***drive alone*** and ***transit*** are slightly less than their share of the workforce, and those workers dominate ***walk*** and ***other modes***;
- North Bay commuter shares for ***drive alone***, ***ridesharing***, and ***transit*** approximate their share of all San Francisco jobs, with the exception that North Bay commuters account for 70% of all *ferry* users;
- secondary geographic mode shares are generally similar to primary geographic mode shares, with the exceptions that San Francisco ***rideshare*** and East Bay ***drive alone*** secondary geographic mode shares are greater than their respective primary geographic mode shares;
- geographic mode shares for travel *to work* and travel *from work* are very similar, with the exception that East Bay ***rideshare*** is less and ***transit*** use is greater for travel *from work*.

D. INTERMEDIATE COMMUTE STOPS BY PURPOSE

Worker commute patterns are often more complex than simply a direct trip *to* and *from work*. Many workers routinely make intermediate stops for a variety of purposes during their commute trips and these intermediate stops can influence commute mode choices. The survey identifies intermediate commute stops by purpose and by mode use. These data include some double counting because there are some commuters who make multiple stops for more than one purpose during a single commute trip.

1. PURPOSES FOR STOPS DURING COMMUTE TO WORK

This section illustrates mode splits for each purpose that workers are making stops during the commute *to work*. For the stop purposes provided in the CTBS questionnaire, **Table IID1** and **Figure IID1** present mode splits. Most carpool stops are made by workers who ***rideshare***. Stops for school purposes are primarily made using a ***drive alone*** mode. Stops for medical, recreation, shopping, and cleaners are all between 35% and 40% for ***drive alone*** and ***transit***. The ***transit*** share for intermediate commute stops is most pronounced for restaurant and medical/therapy stops.

TABLE IID1
INTERMEDIATE STOPS DURING COMMUTE TO WORK BY PURPOSE, 1992

MODE	PURPOSE FOR STOPS								
	CARPOOL	MEDICAL/THERAPY	CHILD CARE	RECREATION	SHOPPING	SCHOOL	CLEANERS	RESTAURANT	OTHER
DRIVE ALONE	2.5%	36.3%	28.4%	34.9%	34.7%	40.8%	34.9%	28.9%	35.8%
RIDE SHARE	83.8%	8.3%	36.4%	10.7%	15.7%	26.9%	15.3%	9.0%	17.1%
TRANSIT	13.7%	45.9%	33.8%	41.6%	38.4%	30.5%	38.5%	47.4%	37.6%
ALL OTHER	0.0%	9.5%	1.4%	12.8%	11.2%	1.8%	11.3%	14.7%	9.6%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table IID2 and **Table IID3** present the mode splits for stop purposes based on downtown workplace destinations in Superdistrict 1 and in Superdistricts 2, 3 and 4 respectively.

TABLE IID2
INTERMEDIATE STOPS DURING COMMUTE TO WORK IN SUPERDISTRICT 1 BY PURPOSE, 1992

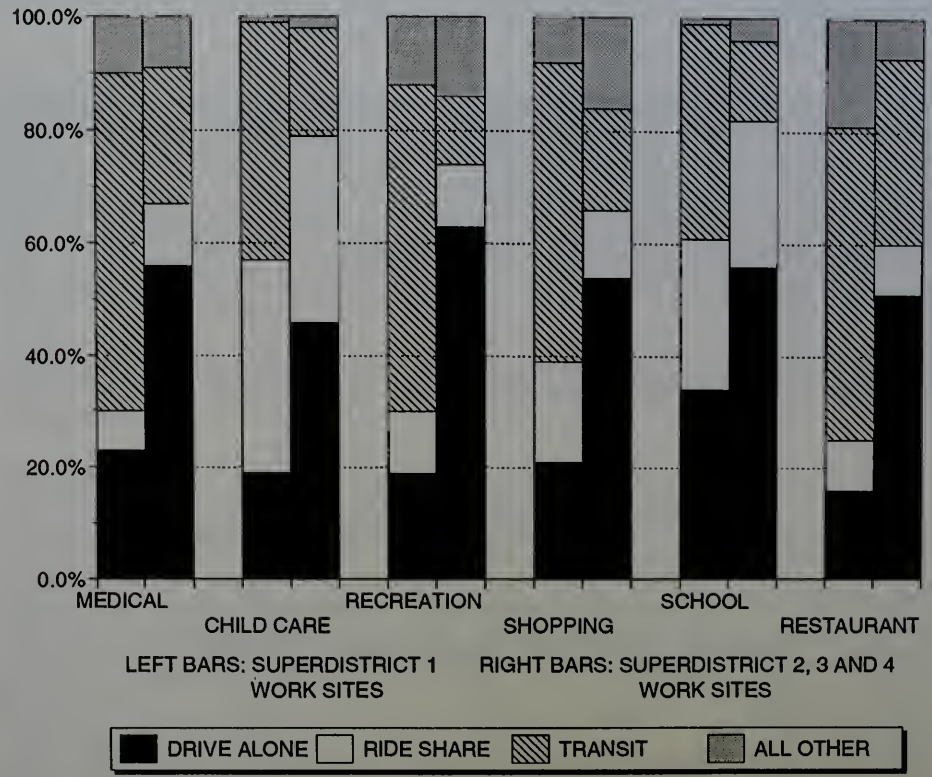
MODE	PURPOSE FOR STOPS								
	CARPOOL	MEDICAL/THERAPY	CHILD CARE	RECREATION	SHOPPING	SCHOOL	CLEANERS	RESTAURANT	OTHER
DRIVE ALONE	1.7%	23.4%	18.9%	19.1%	20.6%	33.9%	20.7%	16.5%	27.1%
RIDE SHARE	87.9%	6.6%	38.2%	10.6%	18.2%	27.2%	19.8%	9.0%	9.7%
TRANSIT	10.4%	60.5%	41.9%	58.4%	53.0%	38.1%	46.6%	55.6%	51.5%
OTHER	0.0%	9.5%	1.0%	11.9%	8.1%	0.8%	12.9%	18.9%	11.5%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

TABLE IID3
INTERMEDIATE STOPS DURING COMMUTE TO WORK IN SUPERDISTRICTS 2, 3 AND 4 BY PURPOSE, 1992

MODE	PURPOSE FOR STOPS								
	CARPOOL	MEDICAL/THERAPY	CHILD CARE	RECREATION	SHOPPING	SCHOOL	CLEANERS	RESTAURANT	OTHER
DRIVE ALONE	4.1%	55.8%	46.3%	63.0%	54.1%	56.1%	61.9%	50.9%	51.6%
RIDE SHARE	75.5%	11.0%	33.1%	10.9%	12.2%	26.3%	6.8%	8.9%	30.6%
TRANSIT	20.4%	23.7%	18.5%	11.7%	18.3%	13.8%	23.2%	32.9%	11.7%
OTHER	0.0%	9.5%	2.2%	14.4%	15.5%	3.8%	8.2%	7.3%	5.9%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Throughout San Francisco, workers primarily use a ***rideshare*** mode for carpool stops. Except for carpool stops using the ***rideshare*** mode, ***transit*** use is greater for all intermediate stops by commuters with downtown destinations than either ***drive alone*** or ***rideshare*** mode use. Commuters with destinations outside downtown use primarily the ***drive alone*** mode for intermediate commute stops.

FIGURE IID1
MODE USE FOR INTERMEDIATE STOPS DURING COMMUTE TO WORK IN SAN FRANCISCO, 1992



2. PURPOSES FOR STOPS DURING COMMUTE FROM WORK

This section illustrates the purposes of stops made during commutes *from work.* Data are summarized by column mode split percentages for each stop purpose. The intermediate stop patterns in **Table IID4, Figure IID2** (p.34), **Table IID5** and **Table IID6** are generally similar to those discussed in the preceding commute *to work* section.

TABLE IID4
INTERMEDIATE STOPS DURING COMMUTE FROM WORK BY PURPOSE, 1992

MODE	PURPOSE FOR STOPS								
	CARPOOL	MEDICAL/THERAPY	CHILD CARE	RECREATION	SHOPPING	SCHOOL	CLEANERS	RESTAURANT	OTHER
DRIVE ALONE	5.9%	40.7%	30.8%	35.3%	31.8%	32.7%	33.0%	31.4%	40.9%
RIDE SHARE	75.7%	11.5%	30.1%	6.9%	12.0%	17.1%	9.8%	14.7%	8.7%
TRANSIT	17.9%	46.3%	38.0%	50.4%	48.2%	45.8%	47.2%	44.9%	44.9%
ALL OTHER	0.6%	1.6%	1.1%	7.4%	8.1%	4.4%	10.0%	9.1%	5.4%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The data in the following tables distinguish intermediate stop patterns based on where the commute *from work* begins. **Table IID5** describes commutes *from work* originating in Superdistrict 1, while **Table IID6** details stops made by workers commuting home *from* the rest of San Francisco.

Transit users generally account for a higher share of stops during commutes *from work* than commutes *to work*. Stops for medical/therapy, child care, recreation, shopping, and restaurants made by ***transit*** users present the greatest contrasts. Commuters on ***transit*** from Superdistrict 1, for example, are twice as likely to stop for child care as are workers leaving from the rest of the city.

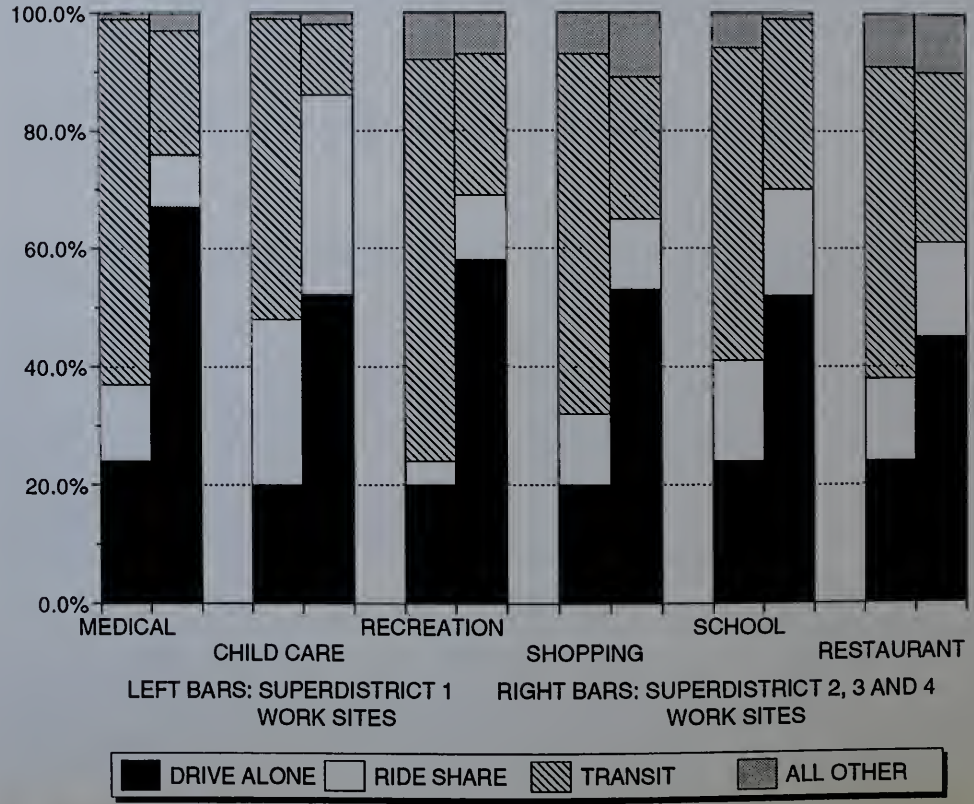
TABLE IID5
INTERMEDIATE STOPS DURING COMMUTE FROM WORK IN SUPERDISTRICT 1 BY PURPOSE, 1992

MODE	PURPOSE FOR STOPS								
	CARPOOL	MEDICAL/THERAPY	CHILD CARE	RECREATION	SHOPPING	SCHOOL	CLEANERS	RESTAURANT	OTHER
DRIVE ALONE	2.8%	24.5%	19.9%	20.5%	20.8%	24.2%	21.1%	24.1%	23.8%
RIDE SHARE	79.5%	13.0%	28.3%	4.2%	11.7%	18.7%	10.9%	14.0%	5.2%
TRANSIT	17.7%	61.6%	51.0%	87.4%	60.9%	53.3%	58.8%	53.0%	64.7%
ALL OTHER	0.0%	1.0%	0.9%	8.0%	6.8%	5.9%	9.2%	8.9%	6.1%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

TABLE IID6
INTERMEDIATE STOPS DURING COMMUTE FROM WORK IN SUPERDISTRICTS 2, 3 AND 4 BY PURPOSE, 1992

MODE	PURPOSE FOR STOPS								
	CARPOOL	MEDICAL/THERAPY	CHILD CARE	RECREATION	SHOPPING	SCHOOL	CLEANERS	RESTAURANT	OTHER
DRIVE ALONE	10.8%	67.5%	52.6%	57.9%	53.4%	51.4%	59.3%	45.5%	68.7%
RIDE SHARE	69.6%	9.0%	33.8%	11.1%	12.4%	17.9%	7.3%	15.9%	14.3%
TRANSIT	18.2%	21.0%	12.2%	24.4%	23.6%	29.3%	21.4%	29.2%	12.6%
ALL OTHER	1.5%	2.6%	1.5%	6.6%	10.6%	1.4%	12.0%	9.5%	4.2%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

FIGURE IID2
MODE USE FOR INTERMEDIATE STOPS DURING COMMUTE FROM WORK IN SAN FRANCISCO, 1992



E. INTERMEDIATE COMMUTE STOPS BY MODE

The following two sections describe the distribution of intermediate stops for each mode. These sections help to explain each mode in terms of the intermediate stops workers make.

1. MODE USE FOR INTERMEDIATE STOPS DURING COMMUTE TO WORK

Over half of the stops by ***drive alone*** and ***transit*** commuters traveling *to work* in San Francisco are made to shop, eat or for child care purposes. In almost all instances, the proportion of each intermediate stop purpose is remarkably similar for commuters who ***drive alone*** and use ***transit***. Sixty percent of all stops by ***rideshare*** commutes are made for carpooling.

TABLE IIE1
INTERMEDIATE STOPS DURING COMMUTE TO WORK BY MODE, 1992

MODE	PURPOSE FOR STOPS									
	CARPOOL	MEDICAL/THERAPY	CHILD CARE	RECREATION	SHOPPING	SCHOOL	CLEANERS	RESTAURANT	OTHER	TOTAL
DRIVE ALONE	2.5%	4.0%	19.6%	9.8%	21.2%	6.5%	6.0%	12.3%	18.1%	100.0%
RIDE SHARE	59.8%	0.6%	17.4%	2.1%	6.6%	3.0%	1.8%	2.6%	5.9%	100.0%
TRANSIT	11.0%	4.0%	18.2%	9.1%	18.3%	3.8%	5.1%	15.7%	14.8%	100.0%
ALL OTHER	0.0%	4.1%	3.7%	14.0%	28.6%	1.1%	7.5%	24.3%	18.8%	100.0%

The following tables present breakdowns of the purposes for stops during the commute *to work* by mode for Superdistrict 1 and the rest of the City.

TABLE IIE2
INTERMEDIATE STOPS DURING COMMUTE TO WORK IN SUPERDISTRICT 1 BY MODE, 1992

MODE	PURPOSE FOR STOPS									
	CARPOOL	MEDICAL/THERAPY	CHILD CARE	RECREATION	SHOPPING	SCHOOL	CLEANERS	RESTAURANT	OTHER	TOTAL
DRIVE ALONE	2.8%	3.8%	20.5%	8.3%	17.7%	8.9%	6.6%	10.8%	21.6%	100.0%
RIDE SHARE	62.2%	0.6%	17.6%	2.0%	6.6%	3.0%	2.3%	2.5%	3.3%	100.0%
TRANSIT	7.1%	4.0%	18.7%	10.4%	18.6%	4.1%	6.2%	16.0%	16.8%	100.0%
ALL OTHER	0.0%	3.9%	2.6%	13.0%	17.3%	0.6%	8.7%	31.0%	23.0%	100.0%

TABLE IIE3
INTERMEDIATE STOPS DURING COMMUTE TO WORK IN SUPERDISTRICTS 2, 3 AND 4 BY MODE, 1992

MODE	PURPOSE FOR STOPS									
	CARPOOL	MEDICAL/THERAPY	CHILD CARE	RECREATION	SHOPPING	SCHOOL	CLEANERS	RESTAURANT	OTHER	TOTAL
DRIVE ALONE	2.4%	4.8%	11.2%	13.7%	38.0%	2.9%	5.4%	11.0%	10.6%	100.0%
RIDE SHARE	44.0%	1.9%	15.4%	3.8%	20.2%	2.1%	2.3%	7.2%	3.2%	100.0%
TRANSIT	5.2%	3.8%	9.7%	13.7%	40.4%	2.8%	5.4%	11.0%	8.1%	100.0%
ALL OTHER	1.2%	0.9%	2.0%	14.4%	48.5%	2.0%	8.2%	16.9%	7.0%	100.0%

There are a few small differences in the distribution of purposes for stops between Superdistrict 1 and the rest of the city. For ***drive alone*** commuters, the proportions of intermediate stops for recreation, shopping, school, and restaurants are higher for workers in the outlying districts than for workers in Superdistrict 1. Among commuters who use ***transit***, the shares for child care and recreation stops are higher for downtown workers. ***Transit*** commuters who work outside downtown have a greater percentage of stops for school and restaurant purposes.

2. MODE USE FOR INTERMEDIATE STOPS DURING COMMUTE FROM WORK

This section is similar to the preceding commute *to work* section, except that it illustrates the purposes of stops commuters make when leaving work. Excluding ***carpool*** stops, the most striking difference between **Table IIE4**, intermediate stops on the way *from work*, and **Table IIE1**, intermediate stops on the way *to work*, is stops for shopping purposes. When commuting home, irrespective of mode, 40% of all stops are for shopping.

Table IIE4
INTERMEDIATE STOPS DURING COMMUTE FROM WORK BY MODE, 1992

MODE	PURPOSE FOR STOPS									TOTAL
	CARPOOL	MEDICAL/THERAPY	CHILD CARE	RECREATION	SHOPPING	SCHOOL	CLEANERS	RESTAURANT	OTHER	
DRIVE ALONE	2.4%	4.8%	11.2%	13.7%	38.0%	2.9%	5.4%	11.0%	10.6%	100.0%
RIDE SHARE	44.0%	1.9%	15.4%	3.8%	20.2%	2.1%	2.3%	7.2%	3.2%	100.0%
TRANSIT	5.2%	3.8%	9.7%	13.7%	40.4%	2.8%	5.4%	11.0%	8.1%	100.0%
ALL OTHER	1.2%	0.9%	2.0%	14.4%	48.5%	2.0%	8.2%	15.9%	7.0%	100.0%

The following two tables disaggregate the data in **Table IIE4** for Superdistrict 1 and the rest of the city.

TABLE IIE5
INTERMEDIATE STOPS DURING COMMUTE FROM WORK IN SUPERDISTRICT 1 BY MODE, 1992

MODE	PURPOSE FOR STOPS									
	CARPOOL	MEDICAL/THERAPY	CHILD CARE	RECREATION	SHOPPING	SCHOOL	CLEANERS	RESTAURANT	OTHER	TOTAL
DRIVE ALONE	2.8%	3.8%	20.5%	8.3%	17.7%	8.9%	5.8%	10.8%	21.8%	100.0%
RIDE SHARE	62.2%	0.5%	17.8%	2.0%	6.6%	3.0%	2.3%	2.5%	3.3%	100.0%
TRANSIT	7.1%	4.0%	18.7%	10.4%	18.6%	4.1%	5.2%	15.0%	16.6%	100.0%
ALL OTHER	0.0%	3.9%	2.6%	13.0%	17.3%	0.5%	6.7%	31.0%	23.0%	100.0%

TABLE IIE6
INTERMEDIATE STOPS DURING COMMUTE FROM WORK IN SUPERDISTRICTS 2, 3, AND 4 BY MODE, 1992

MODE	PURPOSE FOR STOPS									
	CARPOOL	MEDICAL/THERAPY	CHILD CARE	RECREATION	SHOPPING	SCHOOL	CLEANERS	RESTAURANT	OTHER	TOTAL
DRIVE ALONE	2.9%	5.1%	11.0%	15.2%	37.3%	2.4%	5.2%	9.3%	11.8%	100.0%
RIDE SHARE	41.3%	1.5%	15.6%	8.5%	19.2%	1.9%	1.4%	7.2%	5.4%	100.0%
TRANSIT	11.2%	3.7%	5.9%	14.8%	38.2%	3.2%	4.3%	13.6%	4.9%	100.0%
ALL OTHER	2.9%	1.4%	2.3%	12.5%	53.8%	0.5%	7.6%	14.0%	5.2%	100.0%

Percentages in the preceding two tables are quite similar. Among ***drive alone*** commuters working in Superdistrict 1, restaurant stops are more frequent and recreation stops are less frequent than similar stops for workers in Superdistricts 2, 3 and 4. Commuters using ***transit*** and working downtown have larger shares of child care, shopping and restaurant stops than their counterparts working in outlying districts.

3. SUMMARY OF INTERMEDIATE STOPS BY PURPOSE AND BY MODE

The principal findings concerning intermediate stops during commutes *to work* and *from work* are as follows:

- most intermediate stops during the commute *to work* are for shopping, eating, and child care;
- shopping trips usually account for over 40% of all intermediate stops during the commute *from work*;
- citywide, ***drive alone*** and ***transit*** each are used by 35-40% of all those who make stops on the way *to* and *from work*;
- ***transit*** use is two to three times greater than ***drive alone*** for intermediate stops among those who work in Superdistrict 1;
- ***drive alone*** is used two to three times as often as ***transit*** for intermediate stops among those who work in Superdistricts 2, 3 and 4;
- relatively consistent modal shares indicate that a worksite location in Superdistrict 1 suggests use of the ***transit*** mode and a worksite location in the outlying districts suggests use of the ***drive alone*** mode for intermediate commute stops. There are only minor differences in travel choices based on the purpose of intermediate commute stops.

F. WORKER MODE CHOICES AND TRIP RATES BY LAND USE CLASSIFICATIONS

In the following two sections, commute and non-commute travel are described in terms of land use activities. The CTBS design places a statistical priority on representative samples of establishments by geographic location and size (see "Summary of Survey Methodology" in the Introduction) and not on establishments by land use. The statistical weighting of survey responses for this section of the report differs from all other data in this report. Statistical weights for the following data adjust the samples to reflect the San Francisco distribution of establishments by land use activity. Consequently, the data in this section are less accurate than the data in other sections of this report. This section begins to provide a picture of how different land uses influence the travel patterns of San Francisco workers.

1. MODE TO WORK BY LAND USE ACTIVITY

In this first section, the commute mode splits by land use are provided. Following this initial general mode split section, all workers using a specific mode are disaggregated by land use activity.

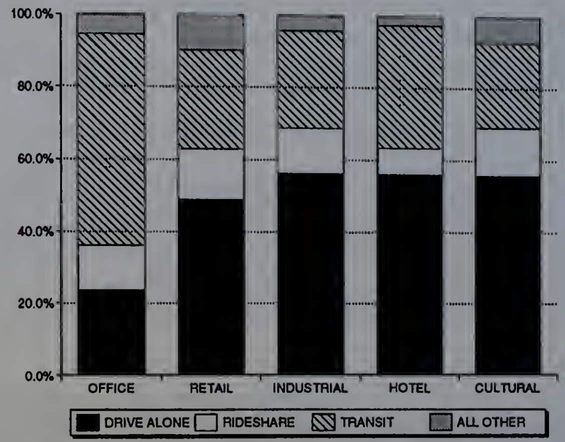
a. Mode Splits by Land Use Activity

Table IIF1 and **Figure IIF1** show mode splits for workers by land use activity. From these data the analysis draws comparisons among commute patterns of workers from each specific land use.

TABLE IIF1
MODE SPLITS TO WORK BY LAND USE ACTIVITY, 1992

COMMUTE MODE	LAND USE OF EMPLOYER				
	OFFICE	RETAIL	INDUSTRIAL/ WAREHOUSE	HOTEL	CULTURAL/ INSTITUTIONAL
DRIVE ALONE	23.7%	48.9%	56.2%	56.1%	55.7%
RIDE SHARE	12.4%	14.1%	12.6%	7.3%	13.4%
TRANSIT	58.5%	27.3%	27.0%	34.2%	23.7%
ALL OTHER	5.4%	9.8%	4.2%	2.4%	7.3%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%

FIGURE IIF1
MODE SPLITS TO WORK BY LAND USE ACTIVITY, 1992



Comparing mode splits in **Table IIF1** reveals many contrasts. Nearly 60% of office workers, for example, use ***transit*** for their commute *to work*. Only 24% to 34% of all commuters *to work* sites in the other land use categories use ***transit***. The 24% ***drive alone*** mode share for office workers is less than half the share for ***drive alone*** commuters to other land use activities. The large number of ***transit*** using office workers reduces what would otherwise be a prevalent ***drive alone*** commute pattern.

Shares for ***rideshare*** and ***other modes*** are generally consistent across the various land use categories. There are two noteworthy exceptions to this pattern. First, there are relatively small shares of hotel workers using ***rideshare*** and the ***other modes***. Second, the mode share of retail workers using ***other modes*** is greater than all other land uses.

b. Land Use Activity Mode Shares

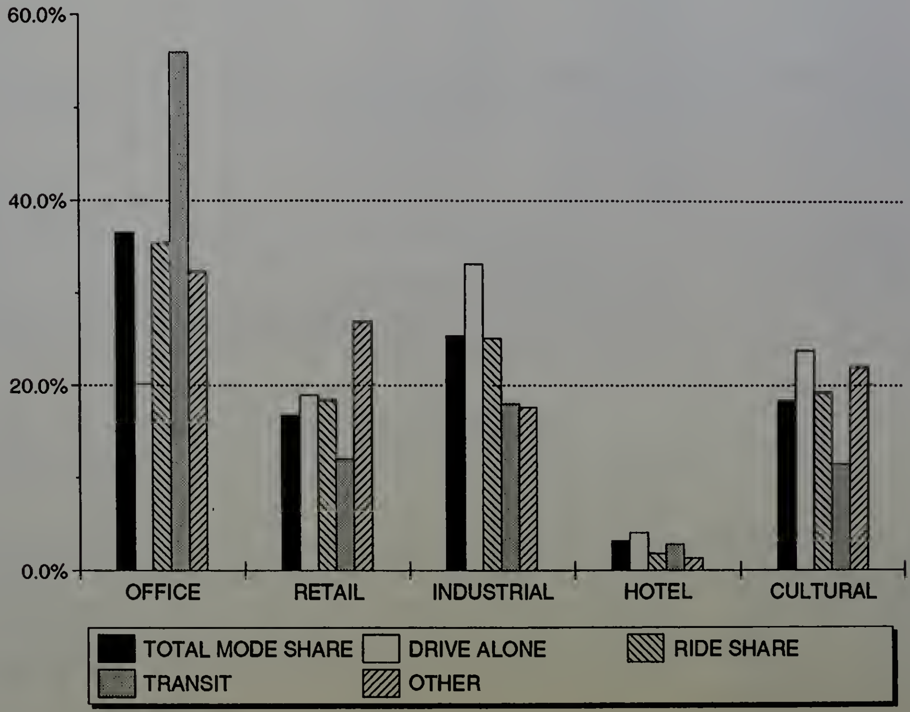
Table IIF2 and **Figure IIF2** show the share for each mode accounted for by each land use type. Nearly 57% of the ***drive alone*** commuters work in either industrial/warehouse or cultural/institutional land use activities. More than 35% of the ***rideshare*** commuters work in office type land uses. Approximately 56% of all ***transit*** users work in office land uses.

Comparing the bottom row of **Table IIF2** to the rows for each mode shows the existence of disproportionate mode choices based on land use. Office workers, for example, account for slightly more than one-third of the workforce in the City. Office workers, however, account for more than half of all ***transit*** commuters ***to*** jobs in San Francisco. Industrial/warehouse, hotel, retail and cultural/institutional land uses each have more ***drive alone*** commuters than their respective shares of the San Francisco workforce.

TABLE IIF2
LAND USE SHARES OF COMMUTE MODES, 1992

COMMUTE MODE	LAND USE OF EMPLOYER					TOTAL
	OFFICE	RETAIL	INDUSTRIAL/ WAREHOUSE	HOTEL	CULTURAL/ INSTITUTIONAL	
DRIVE ALONE	20.2%	19.0%	31.5%	4.4%	25.0%	100.0%
RIDE SHARE	35.6%	18.5%	23.8%	2.0%	20.2%	100.0%
TRANSIT	56.1%	11.9%	17.0%	3.0%	12.0%	100.0%
ALL OTHER	32.2%	26.8%	16.6%	1.4%	23.0%	100.0%
TOTAL WORKERS	36.6%	16.7%	24.1%	3.4%	19.3%	100.0%

FIGURE IIF2
COMPARISON OF ALL COMMUTERS WORKING IN A LAND USE ACTIVITY TO THEIR MODE SHARES, 1992



Continuing this analysis of mode shares one step further, **Table IIF3** disaggregates the total San Francisco workforce mode choice and by land use.

TABLE IIF3
ALL SAN FRANCISCO WORKERS BY LAND USE AND COMMUTE MODE, 1992

COMMUTE MODE	LAND USE OF EMPLOYER				
	OFFICE	RETAIL	INDUSTRIAL/ WAREHOUSE	HOTEL	CULTURAL/ INSTITUTIONAL
DRIVE ALONE	8.7%	8.2%	13.5%	1.9%	10.7%
RIDE SHARE	4.5%	2.4%	3.0%	0.3%	2.6%
TRANSIT	21.4%	4.6%	6.5%	1.2%	4.6%
ALL OTHER	2.0%	1.6%	1.0%	0.8%	1.4%

The data in **Table IIF3** show that more than one out of five San Francisco workers is an office worker using a ***transit*** commute *to work.* One-fourth of all commuters ***drive alone*** to industrial/warehouse or cultural/institutional sector jobs.

c. Summary of Mode Splits by Land Use Activity

The principal differences in modal patterns based on land use are the following:

- nearly 60% of office workers use ***transit*** and a quarter ***drive alone***;
- mode splits for ***drive alone*** and ***transit*** are 50% to 56% and 24% to 34%, respectively, for other land uses;
- office workers make up 37% of the workforce but account for 56% of all ***transit*** users;
- 57% of all ***drive alone*** commuters are industrial/warehouse or cultural/institutional workers but these sectors represent only 34% of all San Francisco jobs.

2. WORKER NON-COMMUTE TRIP RATES BY LAND USE ACTIVITIES

Previous sections of this report have focused on travel patterns during the commute *to* and *from work.* The principal focus of the following sections is on worker non-commute travel which occurs after they have arrived at work and before they leave work for the commute home. Worker non-commute travel is grouped by land use category and is reported in terms of trip rates and mode splits.

Worker non-commute travel includes trips for work or personal reasons but excludes the commute trips *to* and *from work.* Worker trip rates are conventionally reported to encompass all daily travel which includes commute and non-commute trips. The trip rates in **Table IIF4** (p.44) incorporate commute trips as well as non-commute trips and represent worker daily trip rates per 1000 square feet of space for each land use. Subsequent tables in this section deal with only non-commute travel behavior.

a. Worker Daily Trip Rates

Worker daily trip rates include the commute *to work*, the commute *from work*, and travel from the worksite during the workday. Worker trip rates shown in **Table IIF4** are generally very similar for each land use, and there are few differences between worksites in Superdistrict 1 and worksites in outlying districts. The greatest worker trip rates are for Superdistrict 1 cultural/institutional worksites. The worker trip rate for industrial/warehouse worksites is also relatively high citywide and may reflect the absence of on-site amenities which result in a greater number of non-commute trips.

b. Non-Commute Trip Rates by All Modes

Table IIF5 presents average daily non-commute trip data for each land use category. This data measures trip rates based on the number of trips workers make for each 1,000 square feet of work space. Different land use activities, however, have significant variations in the average numbers of workers occupying each 1,000 square feet of work space. The CTBS estimates for the average number of workers occupying 1,000 square feet work space by location and land use activity are provided in the Appendix. Initially, the analysis that follows describes this trip rate measurement for all modes of travel. Following the analysis of all modes, the analysis disaggregates trip rates for each mode.

TABLE IIF4
AVERAGE DAILY WORKER TRIP RATES (PER 1000 SQ.FT.), 1992

LAND USE ACTIVITY	ESTABLISHMENT LOCATION		
	SUPERDISTRICT 1	SUPERDISTRICTS 2,3 & 4	CITYWIDE
OFFICE	8.65	8.10	8.56
RETAIL	5.57	6.15	5.76
INDUSTRIAL/WAREHOUSE	7.56	3.13	6.54
CULTURAL/INSTITUTIONAL	9.85	7.88	8.21
ALL USES	7.39	4.95	6.16

TABLE IIF5
AVERAGE DAILY NON-COMMUTE TRIP RATES (PER 1000 SQ.FT.), 1992

LAND USE ACTIVITY	ESTABLISHMENT LOCATION		
	SUPERDISTRICT 1	SUPERDISTRICTS 2,3 & 4	CITYWIDE
OFFICE	3.37	3.56	3.38
RETAIL	4.01	2.85	3.46
INDUSTRIAL/WAREHOUSE	2.34	1.99	2.02
CULTURAL/INSTITUTIONAL	3.81	3.58	3.63
ALL USES	3.39	2.63	3.10

Citywide, for all uses, the daily average number of non-commute trips per 1,000 square feet of work site floor area is approximately 3.1 trips. This means that the daily average number of non-commute work trips for all San Francisco establishments is more than three trips per 1,000 square feet of work space.

The land uses that generate the greatest number of non-commute trips are retail activities in Superdistrict 1 and cultural/institutional uses outside Superdistrict 1. Retail uses in Superdistrict 1 daily generate an average of more than four non-commute trips for each 1,000 square feet of retail space. The downtown retail uses, therefore, generate over 30% more non-commute trips than the citywide average for all uses.

In general, trip rates for land uses in Superdistrict 1 are greater than the corresponding trip rates for work sites located in Superdistricts 2, 3 and 4. The only exception is the average trip rate for the office sector where the outlying office uses generate higher trip rate than downtown office uses.

c. Trip Rates by Drive Alone, Rideshare, Transit and All Other Modes

Table IIF5 reports non-commute trips for all modes. **Table IIF6** reports the average number of ***drive alone*** non-commute trips. Citywide, for all land uses, about one of every four non-commute trips is a ***drive alone*** trip. 58% of the non-commute trips made by workers in Superdistricts 2, 3 and 4 are ***drive alone*** trips. For industrial workers with jobs outside Superdistrict 1, nearly 85% (e.g., 1.60 [**Table IIF6**] of 2.02 [**Table IIF5**] trips) of all non-commute trips are in an automobile.

For all Superdistrict 1 work sites, only one in eight non-commute trips is in an automobile. The shares of non-commute trips by automobile, in Superdistrict 1, are smallest for office and retail uses and greatest in the industrial and cultural/institutional activities.

TABLE IIF6
DRIVE ALONE NON-COMMUTE TRIP RATES (PER 1000 SQ.FT.) AND MODE SPLITS BY LAND USE ACTIVITY, 1992

LAND USE ACTIVITY	ESTABLISHMENT LOCATION		
	SUPERDISTRICT 1	SUPERDISTRICTS 2,3 & 4	CITYWIDE
OFFICE	0.36 (11%)	2.30 (65%)	0.43 (13%)
RETAIL	0.41 (10%)	1.24 (44%)	0.80 (23%)
INDUSTRIAL/WAREHOUSE	0.99 (42%)	1.67 (84%)	1.60 (79%)
CULTURAL/INSTITUTIONAL	1.39 (36%)	1.12 (31%)	1.17 (32%)
ALL USES	0.42 (12%)	1.52 (58%)	0.84 (27%)

TABLE IIF7
MUNI NON-COMMUTE TRIP RATES (PER 1000 SQ.FT.) AND MODE SPLITS BY LAND USE ACTIVITY, 1992

LAND USE ACTIVITY	ESTABLISHMENT LOCATION		
	SUPERDISTRICT 1	SUPERDISTRICTS 2,3 & 4	CITYWIDE
OFFICE	0.25 (07%)	0.48 (13%)	0.26 (08%)
RETAIL	0.33 (08%)	0.29 (10%)	0.31 (09%)
INDUSTRIAL/WAREHOUSE	0.41 (18%)	0.03 (02%)	0.07 (03%)
CULTURAL/INSTITUTIONAL	ND	0.31 (09%)	0.25 (07%)
ALL USES	0.26 (08%)	0.15 (06%)	0.22 (07%)

(ND = No Data)

Table IIF7 data show the daily average number of non-commute trips using *MUNI*. Based on citywide as well as disaggregate data for land use categories, workers use *MUNI* less frequently than an automobile for non-commute trips. Citywide, for all land uses, for every four non-commute automobile trips, only one trip is on *MUNI*. Retail workers, irrespective of job location, are making non-commute trips on *MUNI* at rates similar to downtown office workers. Non-commute trip rates on *MUNI* are most similar to automobile trip rates for office and retail workers in Superdistrict 1.

Industrial and warehouse workers in Superdistrict 1 average 0.41 daily non-commute trips on *MUNI*. Outside Superdistrict 1, industrial and warehouse land uses have a daily average of only 0.03 non-commute trip rate on *MUNI*. In other words, for every industrial worker non-commute trip on *MUNI* in Superdistricts 2, 3 and 4, there are 13 such trips in Superdistrict 1.

Table IIF8 provides ***transit*** non-commute trip rates. *MUNI* accounts for the vast majority of non-commute trips for workers using ***transit***. This is especially the case in the outlying districts where the *BART* share of the total ***transit*** non-commute trip rate is negligible. Only among office uses in Superdistrict 1 is there evidence of significant *BART* use for non-commute trips.

TABLE IIF8
TRANSIT (MUNI AND BART) NON-COMMUTE TRIP RATES AND MODE SPLITS (PER 1000 SQ.FT.)BY LAND USE ACTIVITY, 1992

LAND USE ACTIVITY	ESTABLISHMENT LOCATION		
	SUPERDISTRICT 1	SUPERDISTRICTS 2,3 & 4	CITYWIDE
OFFICE	0.37 (11%)	0.48 (13%)	0.37 (11%)
RETAIL	0.33 (08%)	0.30 (11%)	0.32 (09%)
INDUSTRIAL/WAREHOUSE	0.41 (18%)	0.04 (02%)	0.07 (03%)
CULTURAL/INSTITUTIONAL	ND	0.39 (11%)	0.32 (09%)
ALL USES	0.36 (11%)	0.36 (11%)	0.29 (09%)

It is important to emphasize that many non-commute trips, especially in Superdistrict 1, are made using modes other than automobile, ***BART*** and ***MUNI***. **Table IIF9** displays daily average non-commute trip rate using ***other modes***. Of the citywide 3.1 daily average non-commute trip rate for all uses in **Table IIF5**, 63%, or 1.94 trips (**Table IIF9**), are using ***other modes***. These ***other modes*** include walking and many modes not otherwise covered in this section of tables. Most of the retail workers in Superdistrict 1 make their non-commute trips by these ***other modes***. Downtown retail worker data shows that eight out of every 10 non-commute trips use these ***other modes***.

TABLE IIF9
DAILY AVERAGE NON-COMMUTE TRIPS USING OTHER MODES AND MODE SPLITS BY LAND USE ACTIVITY, 1992

LAND USE ACTIVITY	ESTABLISHMENT LOCATION		
	SUPERDISTRICT 1	SUPERDISTRICTS 2,3 & 4	CITYWIDE
OFFICE	2.59 (77%)	0.77 (22%)	2.53 (75%)
RETAIL	3.26 (81%)	1.31 (46%)	2.34 (68%)
INDUSTRIAL/WAREHOUSE	0.95 (41%)	0.28 (14%)	0.35 (17%)
CULTURAL/INSTITUTIONAL	2.42 (64%)	2.01 (56%)	2.09 (58%)
ALL USES	2.57 (76%)	0.92 (35%)	1.94 (63%)

c. Summary of Non-Commute Trip Rates and Mode Splits

The principal findings about non-commute travel are the following:

- worker non-commute trip rates are generally similar for different land uses;
- trip rates for Superdistrict 1 retail and industrial/warehouse in outlying districts are substantially greater than for other land uses;
- ***other modes*** including walking account for 76% of non-commute travel in Superdistrict 1;
- the ***transit*** 11% overall share of non-commute trips in Superdistrict 1 is about the same as the ***drive alone*** share of 12%, and ***MUNI*** is used rather than ***BART*** for the vast majority of these transit trips;
- workers in Superdistricts 2, 3 and 4 use the ***drive alone*** mode for over half of all non-commute trips.
- the ***MUNI*** overall modal split for non-commute trips in Superdistrict 1 of 8% is similar to its 6% share in outlying districts.

G. RIDESHARE MODE AVERAGE OCCUPANCY BY DESTINATION

The data in **Table IIG1** show the average number of people per ***rideshare*** vehicle (i.e., ***carpool*** and ***vanpool*** modes) *to* and *from* San Francisco jobs. These data provide a combined average vehicle occupancy for these two modes according to their Superdistrict destinations and departures. In general, the ***rideshare*** mode arrivals in San Francisco have greater occupancy than those leaving the city. Total ***rideshare*** occupancy levels are, however, similar for travel *to* and *from* San Francisco. These similar ***rideshare*** occupancy levels, despite fewer workers using ***carpools*** to return home *from work* (e.g., East Bay commuters), occur because there is a decrease in the total number of ***carpools*** leaving the City.

TABLE IIG1
AVERAGE NUMBER OF PEOPLE PER RIDESHARE VEHICLE, 1992

	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	CITYWIDE
CARPOOL TO SAN FRANCISCO	3.2	2.5	2.4	2.1	2.9
CARPOOL FROM SAN FRANCISCO	3.2	2.6	2.2	2.1	2.8

No matter the destination, differences in ***rideshare*** vehicle occupancy figures between Superdistricts are small. Contrasts in the ***rideshare*** occupancy figures are most evident between Superdistricts 1 and 4. The greatest ***rideshare*** occupancies are in vehicles going *to* and leaving *from* Superdistrict 1 (3.2 workers), while the smallest are in ***rideshare*** vehicles going *to* and leaving *from* Superdistrict 4 (2.1 workers).

H. AVERAGE VEHICLE RIDERSHIP (AVR)

This study uses a definition of Average Vehicle Ridership (AVR) taken directly from the Bay Area Air Quality Management District (BAAQMD) Regulation 13, Rule 1. AVR is intended to provide a standard measurement to evaluate the effectiveness of transportation control measure strategies. AVR is calculated for employees who arrive at their work sites during the peak morning period (i.e., 6:00 a.m. to 10:00 a.m.). For purposes of comparison, however, this study also provides AVR for all employees, regardless of the arrival time *to work*.

AVR is calculated by dividing the number of employees by the number of private vehicles associated with these workers. AVR is simply the average number of employees per private vehicle for each daily commute trip *to work*. A private vehicle is any motorized, non-transit vehicle, including motorcycles.

1. AVR BY ESTABLISHMENT SIZE FROM 6:00AM TO 10:00AM

The BAAQMD AVR standards apply only to businesses with 100 or more employees (which BAAQMD defines as large employers) located downtown (Superdistrict 1) and outside downtown (Superdistricts 2, 3 and 4 aggregated). BAAQMD AVR standards for San Francisco are 2.5 for Superdistrict 1 and 1.5 for the rest of the City. In **Table IIH1** below, the calculated AVRs for the peak morning commute period are presented for commute destinations in San Francisco. In Superdistrict 1, the AVR for large employers during the peak morning commute is 4.9. The Superdistrict 1 AVR for large employers is significantly greater than the BAAQMD standard of 2.5. For large employers outside Superdistrict 1, the commuter AVR of 1.8 also exceeds the BAAQMD 1.5 AVR standard. The citywide 2.8 AVR is also greater than the more exacting standard established for Superdistrict 1. These data show that 1999 BAAQMD standards for large San Francisco employers are exceeded by the 1992 citywide AVR that includes both large and small employers.

TABLE IIH1
AVERAGE VEHICLE RIDERSHIP (AVR) BY ESTABLISHMENT SIZE AND LOCATION FOR WORKERS ARRIVING TO WORK BETWEEN 6:00 A.M. AND 10:00 A.M. (1999 STANDARDS IN PARENTHESES), 1992

NUMBER OF WORKERS	ESTABLISHMENT LOCATION		
	SUPERDISTRICT 1	SUPERDISTRICTS 2, 3 AND 4	CITYWIDE
LESS THAN 100	3.5	1.6	2.3
100 OR MORE	(2.5) 4.9	(1.5) 1.8	3.3
ALL ESTABLISHMENTS	4.2	1.7	2.8

The morning peak period **Table IIH1** also presents the AVR for small employers that BAAQMD defines as those having fewer than 100 employees. As with larger employers, smaller employers located in Superdistrict 1 have a greater AVR than either the small employers outside Superdistrict 1 or the Citywide AVR. The AVR figures for small employers are consistently less than the AVR for large employers no matter the employer location in San Francisco. In all cases, however, small and large San Francisco employers exceed the 1999 BAAQMD AVR standards.

2. ALL DAY AVR BY ESTABLISHMENT SIZE

Table IIH2 contains AVR rates for all travel *to work* throughout the day. All day AVR figures mirror the general relationships of the morning peak period commute AVR. It can be reasonably expected that all day AVR rates will be lower than AVR rates for the 6:00 a.m. to 10:00 a.m. peak period. All day AVR decreases are most likely a consequence of less transit and ridesharing convenience outside the peak morning period. All day San Francisco AVR rates also exceed 1999 BAAQMD standards for both large and small employers.

TABLE IIH2
ALL DAY AVERAGE VEHICLE RIDERSHIP (AVR) BY ESTABLISHMENT SIZE, 1992

NUMBER OF WORKERS	ESTABLISHMENT LOCATION		
	SUPERDISTRICT 1	SUPERDISTRICTS 2, 3 AND 4	CITYWIDE
LESS THAN 100	3.3	1.6	2.3
100 OR MORE	4.5	1.7	3.0
ALL ESTABLISHMENTS	3.9	1.6	2.6

III. WORKER TRAVEL BEHAVIOR INFLUENCES AND DETERMINANTS

Section II reports CTBS findings for many aspects of worker travel. Mode splits and the trip-making characteristics are described in that section without addressing the factors influencing worker travel patterns. Section III presents an analysis of factors that influence commuter travel. This section first presents findings on worker ratings of several subjective factors that are important in making mode choices. Next, it presents data concerning a few objective factors that are commonly believed to influence modal choices. These objective factors include income, travel time, automobile ownership and parking costs. Finally, this section presents results of a statistical analysis of these objective and subjective factors and their strength of association for the major travel modes.

A. TRAVEL BEHAVIOR INFLUENCES

1. SUBJECTIVE INFLUENCES ON MODE CHOICE

This section begins with detailed data ranking the importance of mode choice influences. This analysis considers influences based on:

- geographic origin of commute trips,
- all travel (regardless of mode),
- ***drive alone*** travel,
- travel destined *to* downtown Superdistrict 1 *work* sites, and
- travel destined *to work* sites located in Superdistricts 2, 3, or 4.

The results of these detailed influences analyses are remarkably similar. Many summary tables developed for this detailed analysis thus are very repetitive. The tables included in this report therefore are limited to summary tables for commuters by all modes and drive alone commuters.

Table IIIA1 and **Table IIIA2** summarize the commute mode influences by their relative importance. **Table IIIA1** data describe influences regardless of commute mode, origin or destination. **Table IIIA2** data present influences for workers who ***drive alone*** *to* ***work*** from all origins.

TABLE IIIA1
COMMUTE TO WORK MODE CHOICE INFLUENCES FOR ALL SAN FRANCISCO WORKERS, 1992

FACTOR RANKINGS	COMMUTE FACTORS INFLUENCING MODE CHOICE										
	COMMUTING COSTS	CONVENIENCE	TRAVEL TIME	NEED CAR	COMFORT & PRIVACY	PERSONAL SAFETY	TRANSIT NOT AVAILABLE	NO DEPENDENCE ON OTHERS	ENJOY TRAVEL WITH OTHERS	ENVIRONMENTAL CONCERNS	TOTAL
VERY IMPORTANT	4.9%	7.5%	6.7%	3.2%	2.9%	5.6%	3.1%	3.5%	0.9%	3.4%	
IMPORTANT	2.0%	1.9%	2.3%	1.2%	2.4%	1.8%	1.0%	1.7%	1.0%	2.4%	
MODERATELY IMPORTANT	2.0%	0.7%	1.0%	1.6%	2.9%	1.7%	1.8%	2.1%	3.0%	2.7%	
SLIGHTLY IMPORTANT	0.5%	0.1%	0.1%	1.6%	1.2%	0.5%	0.6%	1.1%	1.7%	0.7%	
NOT IMPORTANT	0.6%	0.2%	0.2%	2.4%	0.6%	0.5%	2.3%	1.6%	3.2%	0.6%	
											100.0%

TABLE IIIA2
COMMUTE TO WORK MODE CHOICE INFLUENCES FOR SAN FRANCISCO WORKERS WHO DRIVE ALONE, 1992

FACTOR RANKINGS	COMMUTE FACTORS INFLUENCING MODE CHOICE										
	COMMUTING COSTS	CONVENIENCE	TRAVEL TIME	NEED CAR	COMFORT & PRIVACY	PERSONAL SAFETY	TRANSIT NOT AVAILABLE	NO DEPENDENCE ON OTHERS	ENJOY TRAVEL WITH OTHERS	ENVIRONMENTAL CONCERNS	TOTAL
VERY IMPORTANT	3.4%	7.9%	7.3%	5.9%	4.1%	5.9%	2.5%	4.2%	0.7%	2.6%	
IMPORTANT	1.7%	1.6%	1.8%	1.7%	2.0%	1.5%	1.2%	1.8%	0.9%	2.1%	
MODERATELY IMPORTANT	2.7%	0.6%	0.9%	1.4%	2.4%	1.7%	2.3%	2.0%	3.1%	3.6%	
SLIGHTLY IMPORTANT	0.9%	0.1%	0.1%	0.6%	1.0%	0.5%	1.1%	0.6%	1.8%	0.8%	
NOT IMPORTANT	1.2%	0.2%	0.2%	0.6%	0.6%	0.4%	2.3%	1.2%	3.2%	0.9%	
											100.0%

These data suggest that "convenience," "travel time," and "personal safety" are "very important" influences. Each of these influences is "very important" for 6% to 8% of all commuters and, in combination, they are "very important" for about one in five commuters. These same influences are also of "some importance" for other commuters.

The only other influence of comparable importance is that 6% of the ***drive alone*** commuters identify "need car" as a "very important" factor. Of the other factors influencing mode choices, "commuting costs," "no dependence on others" and "transit not available" are significant.

There are also very consistent patterns in the data for the influences that are considered "not important." The influences of "comfort and privacy," "enjoy travel with others" and "environmental concerns" are less important. Influences having the least importance on commute mode choice are "transit not available," "enjoy travel with others" and "no dependence on others."

The previous section summarizes the relative importance of various influences on commute behavior as identified by workers themselves. The following sections present data which supplement these subjective rankings of influences by workers. The influence of objective factors including income, travel time, auto ownership, and parking costs are examined. Correlation analysis is then performed on both objective and subjective influences to determine the relative strength of the relationships between these factors and travel behavior.

B. WORKERS BY OCCUPATION AND HOUSEHOLD INCOME

Table IIIB1 provides household income levels compared to San Francisco worker occupations. The percentages of workers by occupation are presented in relation to different levels of household income.

More than half of the households with at least one worker employed in management and engineering occupations earn incomes of $65,000 or more. Households in which there are workers in financial, health and research/development occupations have earnings just below those households with management and engineering workers.

Households with workers in the field of education have a more varied income structure. Only 17% of households with people working in these occupations have annual incomes exceeding $65,000. The service sector, which includes clerical, services and retail workers, has a high proportion of households in the lower income categories. Household income distributions show a substantial income difference between service related jobs and other professional occupations.

TABLE IIIB1
HOUSEHOLD INCOME BY SAN FRANCISCO WORKER OCCUPATIONS, 1992

ANNUAL INCOME	OCCUPATION											
	EDUCATION	ENGINEERING, ARCHITECTURE	FINANCE, ACCOUNTING, BANKING INSURANCE & REAL ESTATE	HEALTHCARE, MEDICAL & LEGAL	RESEARCH & DEVELOPMENT	MANAGEMENT	SALES, MARKETING	CRAFTS, SKILLED WORKER	CLERICAL	SERVICES	PROCESSING, OPERATION & CONSTRUCTION	OTHER
LESS THAN $17,000	20.1%	17.8%	40.7%	66.0%	79.8%	15.0%	13.1%	15.2%	12.1%	23.8%	20.1%	21.3%
$17,000-$25,999	19.8%	58.9%	10.5%	69.3%	11.6%	43.0%	13.9%	12.9%	23.2%	17.5%	22.4%	17.1%
$26,000-$32,999	13.0%	62.2%	15.3%	10.0%	60.3%	89.2%	10.8%	11.4%	18.6%	13.2%	99.3%	12.7%
$33,000-$43,999	13.0%	12.6%	14.8%	14.2%	17.3%	11.8%	15.0%	17.8%	14.7%	10.7%	14.7%	10.9%
$44,000-$53,999	90.6%	10.6%	10.5%	13.9%	88.9%	83.7%	10.5%	18.5%	11.4%	10.7%	85.3%	96.6%
$54,000-$64,999	86.1%	12.2%	11.7%	97.4%	19.4%	11.2%	79.1%	94.1%	81.1%	78.8%	55.5%	96.5%
$65,000 OR MORE	16.5%	50.7%	33.2%	38.8%	28.9%	56.0%	28.8%	14.9%	11.8%	18.3%	18.8%	18.7%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

C. 1991 HOUSEHOLD INCOMES BY COMMUTE MODE AND WORKER RESIDENCE

1. 1991 HOUSEHOLD INCOME AND COMMUTE MODE

a. Household Income by Commute Mode

Table IIIC1 provides household income shares for each mode choice. This income share analysis provides a first look at modal patterns in relationship to income earning ability of San Francisco workers. Later in this section, mode splits for each household income category are presented. In a subsequent section, the association of household income to mode choices is tested.

The all modes column in **Table IIIC1** shows the general household income shares of all those who work in San Francisco. Comparisons between this "all modes" column and the more specific mode columns highlight the household income differences between commuters using various modes. For example, if each mode had a user population that typified the San Francisco workforce, then the percentages in each mode column would be identical to the "all modes" column. The ***transit*** user population most closely reflects patterns of income distribution in the total San Francisco workforce.

Workers from households in which the annual income is less than $17,000 represent the largest share of workers using ***other modes*** (i.e., walking, bicycles, motorcycles). One in nine San Francisco worker households falls in this income category, yet two out of nine workers from these households use ***other modes***. Worker households earning annual incomes of less than $17,000 represent the smallest percentage of workers who ***drive alone** to work* in San Francisco.

Just over 7% of workers from households with incomes of $17,000 or less use a ***rideshare*** commute mode. In comparison, 34% of workers from households with incomes of $65,000 or more ***rideshare***. These workers represent 26% of all those who work in San Francisco. The ***rideshare*** commute mode, therefore, is disproportionately high for workers in this income category. Three out of ten workers who ***drive alone** to work* are from households in the highest income category. Workers from households with the highest incomes also represent the greatest percentage of those using a ***transit*** commute *to work*.

TABLE IIIC1
1991 HOUSEHOLD INCOME BY WORKER MODE CHOICE, 1992

ANNUAL HOUSEHOLD INCOME	MODE OF COMMUTE				
	DRIVE ALONE	RIDE SHARE	TRANSIT	OTHER	ALL MODES
LESS THAN $17,000	9.3%	7.5%	11.2%	22.6%	12.2%
$17,000-$25,999	12.9%	9.3%	14.6%	18.5%	13.6%
$26,000-$32,999	10.4%	12.3%	13.2%	14.7%	12.3%
$33,000-$43,999	14.7%	12.9%	14.3%	11.8%	14.1%
$44,000-$53,999	11.8%	12.7%	10.4%	8.5%	12.4%
$54,000-$64,999	10.9%	11.6%	9.1%	8.0%	9.6%
$65,000 OR MORE	30.2%	33.7%	27.2%	15.9%	25.9%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%

b. Mode Choice by Household Income

In the preceding discussion, the proportions of each household income category are presented by commute mode. This section presents mode splits by household income categories. **Table IIIC2** provides a bottom row showing general modal splits for all San Francisco workers. Comparisons between specific income category rows to the general mode split begin to reveal the influence income may have on mode choice.

These patterns in **Table IIIC2** are not extreme and the following differences in mode splits between workers in the various income categories are small. The ***drive alone*** mode choice is most prevalent among workers from households with incomes above $33,000. Among commuters who ***rideshare***, the general mode split is 15% and shares within each income category range from 10% to 18%. The ***rideshare*** mode choice is most prevalent among workers from households with incomes greater than $44,000. The general mode split for ***transit*** users is 48% and ***transit*** shares within each income category range from 44% to 51%. ***Transit*** use is most prevalent among workers from households with incomes below $33,000.

Workers in the higher household income categories account for disproportionately high shares of both ***drive alone*** and ***rideshare*** commuters. Workers in the lower household income categories have disproportionately large shares among ***transit*** and ***other mode*** commuters.

TABLE IIIC2
MODE SPLITS BY 1991 HOUSEHOLD INCOMES FOR SAN FRANCISCO WORKERS, 1992

ANNUAL HOUSEHOLD INCOME	MODE OF COMMUTE				TOTAL
	DRIVE ALONE	RIDE SHARE	TRANSIT	OTHER	
LESS THAN $17,000	25.7%	10.3%	49.4%	14.6%	100.0%
$17,000-$25,999	28.7%	10.3%	51.4%	9.6%	100.0%
$26,000-$32,999	25.4%	14.9%	51.3%	8.4%	100.0%
$33,000-$43,999	31.5%	13.8%	48.8%	5.9%	100.0%
$44,000-$53,999	32.2%	17.2%	45.1%	5.4%	100.0%
$54,000-$64,999	32.9%	17.5%	44.0%	5.6%	100.0%
$65,000 OR MORE	32.2%	17.8%	46.1%	4.0%	100.0%
ALL HOUSEHOLDS	31.0%	14.7%	46.6%	7.7%	100.0%

2. 1991 HOUSEHOLD INCOME BY COMMUTE ORIGIN

Table IIIC3 provides 1991 household income splits of San Francisco workers by residence.

The North Bay region has the greatest percentage of San Francisco workers in the highest household income category. More than 50% of the workers commuting from the North Bay have 1991 annual household incomes of $65,000 or more. Thirty-nine percent of workers from the East Bay and 30% of those from the South Bay are living in households with the highest 1991 household incomes. Commuters into the City all have relatively high proportions of households earning salaries of $65,000 or more. The proportions of commuting workers from households earning less than $17,000 range from 4% to 6%. In contrast, the percentages of San Francisco resident workers in this lowest household income category range from 13% to 22%.

This consideration of household income distributions for Superdistricts does not include residents who work outside the City or do not live with someone working in San Francisco. There are greater percentages of resident San Francisco worker households in the lower household income categories than in any other location. Within Superdistricts 1, 3 and 4 the percentages of worker households that earn less than $17,000 are the highest in the City, while workers from Superdistricts 2 and 4 represent the highest percentages of resident worker households with incomes of $65,000 or more.

None of the four Superdistricts has San Francisco worker household income distributions that deviate significantly from the citywide pattern. The greatest percentages of San Francisco workers from middle income households are living in Superdistrict 1. In Superdistrict 4, (southwest portion of the city), almost one out of five workers is from a household that earns less than $17,000 annually, yet another one of five worker households in this Superdistrict earns $65,000 or more. Only one of ten worker households in the southwest area has an income between $33,000 and $43,999.

The distribution of 1991 household incomes in all four Superdistricts compared with other areas is characterized by high percentages of workers in lowest household income category, lower percentages of workers in middle income groups and a high percentage of workers in the highest household income range. Excluding the highest household income group, the percentage of resident workers decreases as the level of annual income increases. For workers commuting into the City, the percentage of workers increases as the level of 1991 annual household income increases.

TABLE IIIC3
1991 HOUSEHOLD INCOMES BY WORKER RESIDENCE, 1992

ANNUAL HOUSEHOLD INCOME	PLACE OF ORIGIN							
	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	SOUTH BAY	NORTH BAY	OTHER
LESS THAN $17,000	22.6%	12.8%	19.0%	19.4%	5.1%	6.3%	3.9%	3.8%
$17,000-$25,999	21.3%	14.6%	18.4%	14.2%	8.6%	15.0%	3.2%	15.5%
$26,000-$32,999	11.8%	18.0%	13.8%	13.7%	9.9%	10.6%	8.2%	10.7%
$33,000-$43,999	14.6%	13.4%	13.4%	12.7%	14.4%	14.7%	11.1%	16.2%
$44,000-$53,999	8.8%	12.1%	10.7%	11.9%	10.7%	10.8%	11.4%	16.5%
$54,000-$64,999	5.5%	7.4%	7.7%	8.1%	12.4%	12.5%	11.3%	2.1%
$65,000 OR MORE	15.3%	21.8%	17.0%	20.1%	39.0%	30.2%	51.0%	35.2%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

3. SUMMARY OF HOUSEHOLD INCOME BY COMMUTE MODE AND WORKER RESIDENCE

The principal findings concerning income are as follows:

- households with workers employed in management and engineering have the greatest concentration in the highest income category;
- households with workers employed in clerical, service, and retail jobs have the greatest concentration in the lower income categories;
- San Francisco resident worker households have greater proportions in the lower income categories and lesser proportions in the higher income categories than workers who commute from outside the city;
- the *transit* mode split is high in all income categories and ranges from 44% to 51%;
- use of the *drive alone* and *ridesharing* modes is greatest among workers from higher income households.

D. TRAVEL TIMES BY WORKER ORIGIN BY MODE

Table IIID1 presents the percentages of workers by place of residence and their travel time *to work*. Travel times from each origin are detailed in four general commute modes.

Several patterns are apparent in this travel time data. Many more than half of all workers commuting into San Francisco experience one-way commutes of over an hour. Most San Francisco resident worker commute times exceed 30 minutes. Over half of all workers from Superdistrict 4 also experience commutes over one hour. For Superdistricts 1, 2 and 3, commute travel times for 35%, 39% and 44% of the workers respectively are one hour or more.

TABLE IIID1
JOURNEY TO WORK TIMES, 1992

ORIGIN	DRIVE ALONE	RIDE SHARE	TRANSIT	OTHER	ALL COMMUTERS
SUPER DISTRICT 1					
0-14 MINUTES	15.5%	13.7%	2.5%	16.1%	10.5%
15-29 MINUTES	40.1%	51.9%	16.6%	36.6%	30.5%
30-59 MINUTES	26.7%	13.0%	25.7%	21.4%	23.7%
50+ MINUTES	16.5%	21.4%	52.2%	25.7%	35.3%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%
SUPER DISTRICT 2					
0-14 MINUTES	11.5%	9.6%	0.2%	24.1%	7.4%
15-29 MINUTES	41.8%	32.7%	14.4%	33.2%	26.2%
30-59 MINUTES	24.3%	25.4%	30.9%	20.8%	27.2%
60+ MINUTES	22.5%	32.3%	54.5%	22.0%	39.2%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%
SUPER DISTRICT 3					
0-14 MINUTES	10.9%	6.5%	0.3%	29.1%	6.7%
15-29 MINUTES	34.5%	27.7%	8.9%	25.8%	21.5%
30-59 MINUTES	26.5%	27.8%	26.9%	22.6%	27.5%
60+ MINUTES	26.2%	38.0%	61.9%	22.3%	44.4%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%
SUPER DISTRICT 4					
0-14 MINUTES	4.3%	3.8%	0.5%	19.5%	3.0%
15-29 MINUTES	32.0%	24.0%	4.4%	24.8%	18.0%
30-59 MINUTES	25.4%	29.0%	25.9%	22.1%	26.1%
60+ MINUTES	36.2%	43.1%	69.3%	33.7%	52.9%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%
EAST BAY					
0-14 MINUTES	0.1%				
15-29 MINUTES	2.2%	1.1%	0.7%		1.0%
30-59 MINUTES	19.6%	17.4%	11.7%		14.3%
50+ MINUTES	76.2%	61.5%	67.6%	100.0%	84.6%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%
NORTH BAY					
0-14 MINUTES					
15-29 MINUTES	3.9%	2.3%			2.0%
30-59 MINUTES	25.5%	18.4%	12.6%		18.9%
60+ MINUTES	70.5%	79.3%	67.2%	100.0%	79.2%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%
SOUTH BAY					
0-14 MINUTES	1.3%	3.5%			1.1%
15-29 MINUTES	17.0%	16.5%	1.7%	26.3%	11.4%
30-59 MINUTES	30.9%	22.6%	14.7%	33.1%	24.1%
60+ MINUTES	50.9%	57.4%	63.6%	36.5%	63.5%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%
OTHER					
0-14 MINUTES				64.0%	10.2%
15-29 MINUTES					
30-59 MINUTES	44.9%	9.4%			14.4%
50+ MINUTES	55.1%	90.6%	100.0%	36.0%	75.4%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%

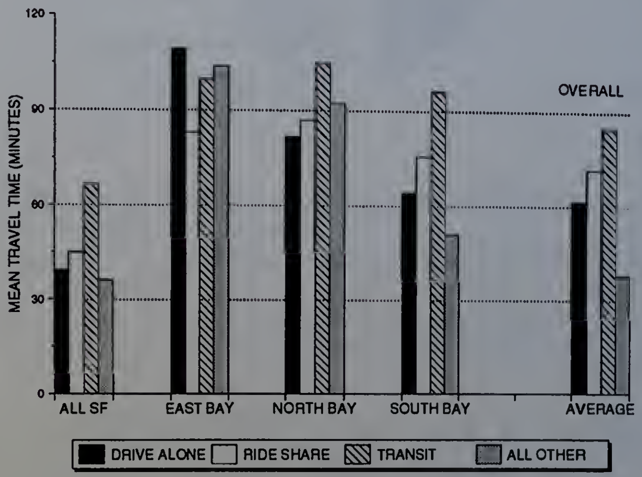
Commuters who travel *to work* by ***transit*** have longer commute times than those who ***drive alone*** or ***rideshare***. Over half of all San Francisco resident workers who commute on ***transit*** have travel times of one hour or longer. From 83% to 87% of all nonresident workers commuting on ***transit*** also have travel times *to work* exceeding one hour.

Nearly half of the workers who ***drive alone*** to work and live in San Francisco have commutes of less than 30 minutes. Among commuters who ***drive alone*** into the City, one in five from the South Bay has travel times of less than half an hour. About three out of four East Bay and North Bay ***drive alone*** workers experience travel times of more than an hour. Commuters who use ***rideshare*** or ***drive alone*** modes from both the North Bay and South Bay have similar travel time patterns.

For commuters from the East Bay and the North Bay, the differences between ***transit, drive alone*** and ***rideshare*** travel time patterns are minor. From both the East Bay and North Bay workers experience very long commute travel times whether they ***drive alone, rideshare*** or use ***transit*** modes. For San Francisco resident workers and workers from the South Bay, however, there are significant disparities between ***transit*** and ***drive alone*** travel times. Workers from San Francisco and the South Bay have faster commutes if they ***drive alone.***

Figure IIID1 is a graphic representation of mean (i.e., average) travel times *to* San Francisco. In nearly all cases the ***transit*** mode is associated with the longest average travel time. Only from the East Bay is average ***drive alone*** travel time greater than ***transit*** commute time *to work.*

FIGURE IIID1
MEAN TRAVEL TIMES BY TRIP ORIGIN AND MODE, 1992



E. MODE SPLITS BY WORKER AUTOMOBILE OWNERSHIP

Table IIIE1 shows the mode splits for those workers who own and those who do not own an automobile.

TABLE IIIE1
MODE SPLITS BY WORKER AUTOMOBILE OWNERSHIP, 1992

AUTOMOBILE OWNERSHIP	MODE OF COMMUTE				TOTAL
	DRIVE ALONE	RIDE SHARE	TRANSIT	OTHER	
YES	46.6%	13.6%	33.7%	6.1%	100.0%
NO	17.2%	6.5%	61.8%	14.5%	100.0%

Less than half of the workers who own an automobile ***drive alone*** *to work*. Another 14% of the automobile owners use an automobile in ***rideshare*** commutes. One-third of all automobile owners use ***transit*** to commute. 62% of all workers who do not own automobiles use ***transit*** to commute.

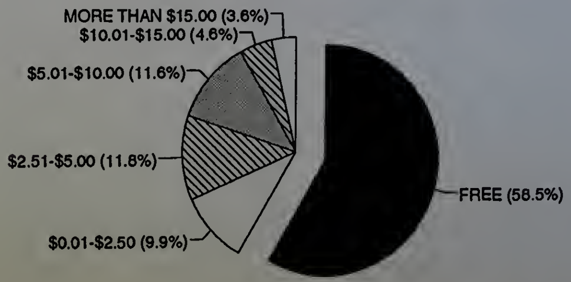
F. PARKING COSTS FOR WORKERS WHO DRIVE ALONE TO WORK

The next three sections describe the parking costs for workers who ***drive alone*** *to work*. Parking cost data are grouped as percentages based on the specific trip origins for workers. Data are first presented citywide and then disaggregated to illustrate parking cost differences for work sites in Superdistrict 1 and the rest of the city.

1. PARKING COSTS CITYWIDE BY WORKER COMMUTE ORIGINS

Table IIIF1 show the parking costs for San Francisco workers by the origin of their commute trips. **Figure IIIF1** shows parking costs citywide regardless of commute origin.

FIGURE IIIF1
DAILY PARKING COSTS FOR ALL ORIGINS, 1992



Most workers ***driving alone to*** San Francisco park free. Only North Bay ***drive alone*** commuters have a majority who pay to park. This trip origin analysis also shows that the greatest percentage of commuters parking free arrive from the East Bay. Of those who pay for parking, most spend between $2.50 and $10 per day. Workers who live in the North Bay and Superdistrict 2, however, are most likely to spend more than $10 a day for parking.

TABLE IIIF1
PARKING COSTS CITYWIDE BY WORKER COMMUTE ORIGIN, 1992

PARKING	TRIP ORIGIN							
COSTS	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	ALL ORIGINS
FREE	64.3%	58.3%	63.6%	59.9%	63.7%	43.3%	56.0%	58.5%
$0.01-$2.50	67.0%	12.0%	12.5%	8.1%	7.3%	10.0%	10.4%	9.9%
$2.51-$5.00	11.1%	11.5%	9.3%	11.0%	10.5%	13.4%	14.5%	11.8%
$5.01-$10.00	16.1%	7.4%	9.2%	13.0%	10.4%	22.1%	11.1%	11.6%
$10.01-$15.00	3.2%	4.6%	4.0%	4.3%	4.4%	5.9%	5.2%	4.6%
MORE THAN $15.00	4.7%	6.2%	1.5%	3.8%	3.6%	5.4%	2.8%	3.6%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

2. PARKING COSTS IN SUPERDISTRICT 1 BY COMMUTE ORIGINS

Table IIIF2 (p.62) shows parking costs for ***drive alone*** commuters ***to*** downtown San Francisco. Even in Superdistrict 1 almost half of all ***drive alone*** commuters park free. Aside from those who park free, most ***drive alone*** commuters ***to*** Superdistrict 1 daily spend more than $2.50 to park. The greatest number of workers who pay for parking in Superdistrict 1 spend between $5 and $15 daily.

3. PARKING COSTS OUTSIDE DOWNTOWN SAN FRANCISCO BY COMMUTE ORIGINS

Table IIIF3 shows that most ***drive alone*** commuters, from locations other than Superdistrict 1, who are bound for jobs outside downtown park for less than $5.00 daily. Over two-thirds of the ***drive alone*** commuters ***to*** locations outside downtown San Francisco park free.

TABLE IIIF2
PARKING COSTS IN SUPERDISTRICT 1 BY WORKER COMMUTE ORIGIN, 1992

PARKING	TRIP ORIGIN							
COSTS	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	OTHER
FREE	49.5%	46.7%	56.8%	51.7%	50.7%	24.0%	39.0%	46.1%
$0.01-$2.50	ND	6.9%	6.8%	0.8%	3.1%	3.1%	7.0%	4.8%
$2.51-$5.00	17.7%	10.5%	14.7%	20.8%	18.0%	13.6%	22.5%	17.6%
$5.01-$10.00	20.8%	14.5%	14.5%	13.9%	16.0%	38.5%	20.4%	16.8%
$10.01-$15.00	5.3%	4.3%	4.9%	5.3%	7.0%	6.3%	5.0%	5.6%
MORE THAN $15.00	6.7%	14.1%	2.7%	7.5%	5.2%	12.3%	6.2%	7.1%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

TABLE IIIF3
PARKING COSTS IN SUPERDISTRICTS 2, 3 AND 4 BY WORKER COMMUTE ORIGIN, 1992

PARKING	TRIP ORIGIN							
COSTS	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	OTHER
FREE	66.1%	63.4%	67.6%	65.6%	75.2%	54.6%	67.6%	67.1%
$0.01-$2.50	1.7%	15.0%	15.9%	13.1%	11.0%	14.0%	12.9%	13.4%
$2.51-$5.00	1.3%	12.1%	6.2%	4.1%	3.9%	13.1%	9.0%	7.6%
$5.01-$10.00	9.3%	3.2%	6.1%	12.4%	5.5%	12.4%	4.6%	6.6%
$10.01-&15.00	ND	4.8%	3.5%	3.6%	2.1%	4.4%	5.3%	4.0%
MORE THAN $15.00	1.7%	1.5%	0.8%	1.2%	2.2%	1.3%	0.5%	1.1%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

4. SUMMARY OF PARKING COSTS FOR WORKERS WHO DRIVE ALONE TO WORK

The principal findings about parking costs are as follows:

- almost half of all ***drive alone*** commuters to Superdistrict 1 park free;
- most workers in Superdistrict 1 who pay for parking spend between $2.50 and $10 daily;
- two-thirds of all ***drive alone*** commuters to Superdistricts 2, 3 and 4 park free;
- most workers in outlying districts who pay for parking spend less than $5 daily;
- North Bay commuters tend to pay more for parking than workers from other origins.

G. LINEAR CORRELATION ANALYSIS

This section provides a statistical analysis of the CTBS data relating influences to mode choice. The analysis that follows tests the possible strengths of relationships between commute modes and factors influencing commuter mode choices. The influences of four objective factors (income, travel time, parking costs and automobile ownership) on mode choice are considered in detail, while the influences of several subjective factors (comfort, perceived safety, etc.) on mode choice are discussed briefly.

Results for all commute trips *to* San Francisco are disaggregated by commute trip origin (East Bay, North Bay, South Bay, or City). These results are further disaggregated by commute trip destination (i.e., San Francisco, Superdistrict 1 or Superdistricts 2, 3 and 4).

Correlations imply a predictive ability, but not necessarily a causal relationship. Saying that two events are strongly correlated means that one is associated with the other, not that one necessarily causes the other. Furthermore, important non-linear relationships may not be evident from this analysis.

The following linear correlation tables are built from 6,830 completed employee surveys. Survey responses are weighted according to employer size and location so that the survey sample is representative of all San Francisco commuters. Non-responses are excluded pairwise during the analysis. In other words, when respondents do not answer some questions, their responses to other questions are still included in the analysis. Response rates vary by question and employer but, in almost every case, the analysis includes more than 90% of the completed surveys. Confidence measures are calculated for all tables to filter out spurious relationships.

These tables present the strengths of linear relationships between variables. Correlations are given between pairs of variables on a +1.0 to -1.0 scale. A perfect positive correlation, +1.0, means that an increase in one variable is directly associated with an increase in another variable. Similarly, -1.0 is a perfect negative correlation where an increase in one variable is associated with decreases in another variable. A 0.0 correlation suggests that changing one variable has no associated influence on the other test variable. These correlation values are generally called correlation coefficients. As a point of reference, **Table IIIG1** shows correlation results for all trips *to* San Francisco.

TABLE IIIG1
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM ALL ORIGINS TO SAN FRANCISCO, 1992

	DRIVE ALONE	RIDE SHARE	TRANSIT
INCOME	0.05	0.08	-0.05
AUTOMOBILE OWNERSHIP	0.04	0.02	-0.03
PARKING COST	-0.02	-0.01	0.02
TRAVEL TIME	-0.08	0.00	0.13

At the aggregate level for all commuter travel, there is a statistically significant but weak relationship between income and mode choice. A higher income is associated with increases in ***driving alone*** and ***carpooling***, as well as decreases in ***transit*** use. There is also evidence of a stronger but still fairly weak travel time influence. ***Driving alone*** is associated with shorter commute times and ***transit*** with longer commute times. There is no significant association between parking cost and mode choice, which is intuitively clear because most ***drive alone*** commuters park free.

The next three tables show mode influences on all trips from the East Bay *to* San Francisco, as well as these East Bay trips *to* Superdistrict 1 and Superdistricts 2, 3 and 4.

TABLE IIIG2
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE EAST BAY TO SAN FRANCISCO, 1992

	DRIVE ALONE	RIDE SHARE	TRANSIT
INCOME	-0.05	0.06	-0.01
AUTOMOBILE OWNERSHIP	0.01	0.00	-0.01
PARKING COST	-0.11	0.06	0.09
TRAVEL TIME	0.04	-0.08	0.03

TABLE IIIG3
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE EAST BAY TO SUPERDISTRICT 1, 1992

	DRIVE ALONE	RIDE SHARE	TRANSIT
INCOME	0.02	0.04	-0.05
AUTOMOBILE OWNERSHIP	0.01	-0.01	0.00
PARKING COST	-0.14	ND	0.14
TRAVEL TIME	0.08	-0.10	0.04

TABLE IIIG4
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE EAST BAY TO SUPERDISTRICT 2, 3 AND 4, 1992

	DRIVE ALONE	RIDE SHARE	TRANSIT
INCOME	-0.03	0.14	-0.11
AUTOMOBILE OWNERSHIP	0.02	0.03	-0.05
PARKING COST	-0.07	0.13	-0.03
TRAVEL TIME	-0.12	-0.01	0.14

Trips from the East Bay show a significant association between parking cost and mode choice. The ***rideshare*** mode is associated with shorter travel times, presumably reflecting shorter Bay Bridge delays for carpools. The ***rideshare*** mode is associated with higher incomes as well, especially for trips *to* Superdistricts 2, 3 and 4. Automobile ownership shows no association with mode choice. The next three tables show all trips from the North Bay *to* San Francisco as well as trips *to* Superdistrict 1 and Superdistricts 2, 3 and 4.

TABLE IIIG5
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE NORTH BAY TO SAN FRANCISCO, 1992

	DRIVE ALONE	RIDE SHARE	TRANSIT
INCOME	0.06	0.05	-0.09
AUTOMOBILE OWNERSHIP	0.07	0.13	-0.18
PARKING COST	-0.02	0.02	ND
TRAVEL TIME	-0.11	-0.04	0.14

TABLE IIIG6
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE NORTH BAY TO SUPERDISTRICT 1, 1992

	DRIVE ALONE	RIDE SHARE	TRANSIT
INCOME	0.18	0.10	-0.23
AUTOMOBILE OWNERSHIP	0.11	0.15	-0.21
PARKING COST	ND	ND	ND
TRAVEL TIME	-0.18	-0.05	0.20

TABLE IIIG7
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE NORTH BAY TO SUPERDISTRICT 2, 3 AND 4, 1992

	DRIVE ALONE	RIDE SHARE	TRANSIT
INCOME	0.03	-0.02	-0.04
AUTOMOBILE OWNERSHIP	-0.02	0.10	-0.11
PARKING COST	-0.06	0.06	ND
TRAVEL TIME	-0.12	-0.04	0.22

For trips from the North Bay, there is a significant association between travel time and mode choice, ***transit*** being associated with longer travel times. ***Transit*** is associated with lower incomes and lower automobile ownership, but only for trips *to* Superdistrict 1. These relationships are stronger for North Bay commuters than for any other group of commuters. Parking cost and mode choice are not statistically associated. The next three tables show all trips from the South Bay *to* San Francisco as well as trips *to* Superdistrict 1 and Superdistricts 2, 3 and 4.

TABLE IIIG8
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE SOUTH BAY TO SAN FRANCISCO, 1992

	DRIVE ALONE	RIDE SHARE	TRANSIT
INCOME	0.03	-0.03	-0.01
AUTOMOBILE OWNERSHIP	0.06	-0.02	-0.05
PARKING COST	0.00	0.00	ND
TRAVEL TIME	-0.11	-0.01	0.13

TABLE IIIG9
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE SOUTH BAY TO SUPERDISTRICT 1, 1992

	DRIVE ALONE	RIDE SHARE	TRANSIT
INCOME	0.02	-0.04	0.00
AUTOMOBILE OWNERSHIP	0.08	-0.03	-0.06
PARKING COST	ND	ND	ND
TRAVEL TIME	-0.09	0.02	0.08

TABLE IIIG10
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM THE SOUTH BAY TO SUPERDISTRICT 2, 3 AND 4, 1992

	DRIVE ALONE	RIDE SHARE	TRANSIT
INCOME	0.12	-0.01	-0.13
AUTOMOBILE OWNERSHIP	0.13	0.02	-0.19
PARKING COST	-0.01	0.01	ND
TRAVEL TIME	-0.07	-0.04	0.14

Relationships between influences and travel modes for trips from the South Bay are similar to, but weaker than, those in North Bay trip data. The association of income and mode choice, however, is not significant for trips *to* Superdistrict 1, but is significant for trips *to* Superdistricts 2, 3 and 4. The next five tables show trips within San Francisco for all combinations of commute travel.

TABLE IIIG11
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES WITHIN SAN FRANCISCO, 1992

	DRIVE ALONE	RIDE SHARE	TRANSIT
INCOME	0.13	0.04	-0.12
AUTOMOBILE OWNERSHIP	0.05	0.03	-0.04
PARKING COST	0.01	-0.03	-0.03
TRAVEL TIME	-0.10	-0.03	0.16

TABLE IIIG12
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM WITHIN SUPERDISTRICT 1 TO SUPERDISTRICT 1, 1992

	DRIVE ALONE	RIDE SHARE	TRANSIT
INCOME	0.15	0.03	-0.04
AUTOMOBILE OWNERSHIP	0.01	0.01	0.08
PARKING COST	0.18	-0.18	ND
TRAVEL TIME	-0.13	0.00	0.22

TABLE IIIG13
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM SUPERDISTRICTS 2, 3 AND 4 TO SUPERDISTRICT 1, 1992

	DRIVE ALONE	RIDE SHARE	TRANSIT
INCOME	0.13	0.09	-0.16
AUTOMOBILE OWNERSHIP	0.07	0.01	-0.06
PARKING COST	0.03	-0.06	-0.06
TRAVEL TIME	-0.15	-0.04	0.18

TABLE IIIG14
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES FROM SUPERDISTRICT 1 TO SUPERDISTRICTS 2, 3 AND 4, 1992

	DRIVE ALONE	RIDE SHARE	TRANSIT
INCOME	0.22	-0.06	-0.22
AUTOMOBILE OWNERSHIP	0.01	0.13	-0.04
PARKING COST	ND	ND	ND
TRAVEL TIME	-0.11	-0.05	0.19

TABLE IIIG15
CORRELATION COEFFICIENTS FOR OBJECTIVE COMMUTE MODE INFLUENCES WITHIN SUPERDISTRICTS 2, 3 AND 4, 1992

	DRIVE ALONE	RIDE SHARE	TRANSIT
INCOME	0.20	0.03	-0.24
AUTOMOBILE OWNERSHIP	0.05	0.03	-0.07
PARKING COST	-0.01	0.01	-0.01
TRAVEL TIME	-0.08	-0.02	0.15

Among San Francisco resident workers there is a moderate association between income and mode choice. The ***drive alone*** mode is associated with higher incomes and transit is associated with lower incomes. This relationship is strongest with trips *to* Superdistricts 2, 3 and 4. For nearly all trips within San Francisco, higher automobile ownership shows a weak association with decreases in ***transit*** use and increases in the ***drive alone*** mode. The single exception to the general automobile ownership association with trip mode is for travel within Superdistrict 1. Parking cost and mode choice are not associated, except for trips within Superdistrict 1. ***Transit*** use is again associated with increased travel time, especially for trips *to* Superdistricts 2, 3 and 4.

Several patterns are common in the above results. The association of travel time and mode is consistently positive for ***drive alone*** and negative for ***transit***. A similar association exists for income and mode, but it is usually weaker. Automobile ownership and parking costs are not associated with mode choice, except in a few cases.

Table IIIG16 shows correlations of subjective responses for all trips *to* San Francisco. As expected, there is a strong association in favor of ***drive alone*** and against ***transit*** between the subjective need for an automobile during the workday and mode choice. There is a similar but weaker relationship between subjective comfort/privacy and mode choice. Cost is associated positively with ***transit*** and negatively with ***drive alone***. Finally, travel with others is associated positively with the ***rideshare*** mode. Environmental concern is associated negatively with ***drive alone***. Independence is associated positively with the ***drive alone*** mode. There is no association between travel time and mode choice for the subjective responses, even though there are, in fact, dramatic travel time differences between modes (**Table IID1**).

TABLE IIIG16
CORRELATION COEFFICIENTS FOR SUBJECTIVE COMMUTE MODE INFLUENCES FOR ALL TRIPS TO SAN FRANCISCO, 1992

	DRIVE ALONE	RIDE SHARE	TRANSIT
COST	-0.26	0.02	0.27
CONVENIENCE	0.03	-0.02	0.01
TRAVEL TIME	0.04	0.02	-0.01
NEED AUTOMOBILE	0.44	0.07	-0.39
COMFORT/PRIVACY	0.14	0.02	-0.11
SAFETY	-0.01	0.00	0.04
TRANSIT AVAILABLE	-0.07	-0.01	0.12
INDEPENDENCE	0.10	-0.05	-0.06
TRAVEL WITH OTHERS	-0.03	0.14	-0.04
ENVIRONMENT	-0.11	0.02	0.07

IV. EMPLOYER PROGRAMS

The following section includes detailed tabular and graphic presentations for two of the questions asked in the CTBS "Employer Survey." Previous sections of this report data include from the "Employee Survey" supplemented in the AVR and land use sections with data from the "Employer Survey." The Appendix contains samples of the "Employer Survey" and "Employee Survey."

A. ALTERNATIVE WORK SCHEDULES AT SAN FRANCISCO ESTABLISHMENTS

This section on Employer Programs provides an inventory of the various work schedules in use at establishments throughout San Francisco. Responses reflect the actual work schedules in operation at the establishments surveyed rather than the desired work schedules or potential work schedule policies that could be of interest to employers and/or workers. Schedules determine when employees arrive and leave the work place each day. Employee arrival and departure times often impact journey-to-work mode choices.

1. CTBS-DEFINED WORK SCHEDULE CATEGORIES

The CTBS survey question related to workplace schedules provides employers with four broad categories by which to characterize work schedule arrangements at San Francisco establishments: fixed hours, staggered hours, compressed week, and other work hours by arrangement. The first three categories represent work schedules assigned by management, while the last category refers to an alternative that is normally initiated by the employee.

These four categories represent very diverse approaches to managing employee work hours. Fixed-hour work schedules standardize arrival and departure times for employees. Staggered-hour schedules provide employees with the option of arriving and departing at times that vary from fixed general work schedules. Compressed schedules include work weeks with more work hours per day, but fewer workdays per week. For example, a compressed schedule could consist of four ten-hour days in a week instead of the conventional work week of five eight-hour days. "Employer Survey" data provides the percentage of on-site workers using each work schedule, as well as the average duration of work shifts.

2. WORK SCHEDULES FOR SAN FRANCISCO ESTABLISHMENTS

Table IVA1 and **Figure IVA1** present alternative work schedules for all business establishments, according to land use activity. Results show that of all those that responded, approximately 30% are office establishments, another 30% are retail establishments, 20% are cultural/institutional establishments, 19% are industrial/warehouse establishments, and only 1% are hotel establishments.

Fixed or staggered-hour formats constitute the most common type of work schedule in San Francisco. Industrial/warehouse uses predominantly operate with fixed work schedules. Of these establishments, 96% use a fixed work schedule consisting of a traditional eight hour day (e.g., 8:00 a.m. to 5:00 p.m.)

The retail sector features the most diverse set of workplace schedules. Approximately 53% of the surveyed retail establishments adhere to a fixed schedule, another 26% have staggered hours, only 2% feature compressed hours and the final 19% allow employees to establish other work hours by arrangement. This last retail sector group includes part-time or per diem employees working at both large and small establishments.

The hotel industry requires a 24-hour workforce, and for this reason, a significant number of hotel establishments permit staggered work schedules. Approximately 88% of the hotel establishments stagger either worker arrival or departure times. The remaining 12% of the hotel establishments operate on a fixed schedule.

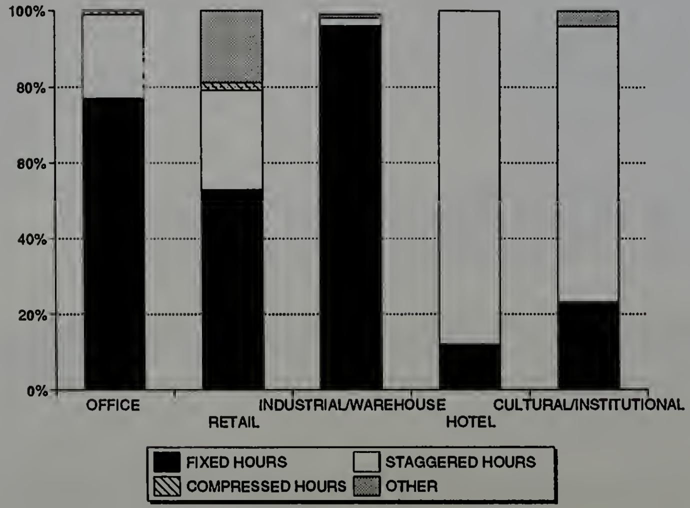
The office sector principally operates on fixed hour schedules. More than three of four office establishments have fixed work hours. Approximately 22% of the office establishments use staggered hour work schedules, while the remaining 1% use compressed work schedules.

Cultural/Institutional activities comprise a variety of uses including but not limited to hospitals, theaters, and museums. Staggered schedules are predominant, comprising 73% of all establishments. Less than one-fourth of the cultural/institutional establishments operate on fixed schedules and the remaining four percent, on other schedules.

TABLE IVA1
ALTERNATIVE WORK SCHEDULES FOR SAN FRANCISCO ESTABLISHMENTS, 1992

LAND USE ACTIVITY	TYPE OF WORK SCHEDULE				
	FIXED HOURS	STAGGERED HOURS	COMPRESSED HOURS	OTHER	TOTAL
OFFICE	77.0%	22.0%	1.0%	0.0%	100.0%
RETAIL	53.0%	26.0%	2.0%	19.0%	100.0%
INDUSTRIAL/WAREHOUSE	96.0%	2.0%	0.0%	1.0%	100.0%
HOTEL	12.0%	88.0%	0.0%	0.0%	100.0%
CULTURAL/INSTITUTIONAL	23.0%	73.0%	0.0%	4.0%	100.0%

FIGURE IVA1
ALTERNATIVE WORK SCHEDULES FOR SAN FRANCISCO ESTABLISHMENTS, 1992



B. ALTERNATIVE WORK SCHEDULES FOR ESTABLISHMENTS WITH 100 OR MORE EMPLOYEES

Table IVB1 classifies large businesses with alternative work schedules according to land use activity. While large employers represent only 13% of all respondents to this section, the percentages of large employers using alternative work schedules are similar to those for all employers. For example, large industrial/warehouse activities indicate work schedules similar to all establishments in this sector. Large employers in this sector say that 99% of these establishments operate on a fixed schedule. The percentage of retail work hours by arrangement for both large and small employers highlights the nature of the retail workforce of which relies on part-time employment or variable hours among employees.

The principal exception to the similarities in work schedules for large establishments and all establishments is in the cultural/institutional category. Here, fixed schedules are used by 15% of large establishments compared to 23% among all employers in the cultural/institutional category. Similarly, larger cultural/institutional activities more frequently use staggered work hour schedules.

TABLE IVB1
ALTERNATIVE WORK SCHEDULES FOR SAN FRANCISCO ESTABLISHMENTS WITH 100 OR MORE EMPLOYEES, 1992

LAND USE ACTIVITY	TYPE OF WORK SCHEDULE				TOTAL
	FIXED HOURS	STAGGERED HOURS	COMPRESSED HOURS	OTHER	
OFFICE	77.0%	23.0%	0.0%	0.0%	100.0%
RETAIL	50.0%	27.0%	2.0%	21.0%	100.0%
INDUSTRIAL/WAREHOUSE	99.0%	0.0%	0.0%	1.0%	100.0%
HOTEL	12.0%	88.0%	0.0%	0.0%	100.0%
CULTURAL/INSTITUTIONAL	15.0%	80.0%	0.0%	4.0%	100.0%

C. EMPLOYER PREFERENCES AND INTERESTS IN MARKETING COMMUTE ALTERNATIVES

The "Employer Survey" explores the role of employer programs in encouraging transit and carpool use among workers. These data gauge the extent of existing use of and level of employer interest in promoting worker commute alternatives. These results assess the current preferences and interests of employers in promoting commute alternatives including but not limited to some worksites at which the use of such programs is driven by existing regulations. While a minority of San Francisco establishments currently promote the use of commute alternatives, survey results could prove helpful in the formulation of Transportation Demand Management (TDM) policies throughout the city.

The following three tables highlight employer marketing preferences among a variety of commute alternative programs. **Table IVC1** provides data for all San Francisco establishments. The subsequent **Table IVC2** and **Table IVC3** disaggregate the data in **Table IVC1** by employers in Superdistrict 1 and Superdistricts 2, 3, and 4, respectively.

One-quarter of employers surveyed presently provide transportation coordinator services. About one in five use marketing materials or provide facilities such as transit shelters, bike racks, showers/lockers or pedestrian amenities. Incentives such as parking pricing and contests/prizes or events/promotions are used by 13% to 15% of employers surveyed. Use of operations such as shuttle service and vanpools or policies including telecommuting is much more limited.

In addition to those employers who already provide some transportation services, another 20% to 25% express interest in providing one or more of these services in the future. One in four employers is interested in using marketing materials or events/promotions, and one in five is interested in incentives, coordinator services, or operations. One in six is interested in providing facilities or using commute alternatives policies.

Well over half of all surveyed employers express a lack of interest in providing any type of commute alternatives services. Employers' disinterest is most pronounced regarding use of commute alternatives policies such as telecommuting.

Geographic variation in employer use and interest in commute alternatives is evident, with greater participation in Superdistrict 1 than in outlying districts. Superdistrict 1 employers have the most extensive use of coordinator services and marketing materials. Almost two in five Superdistrict 1 employers surveyed either currently provide or plan to provide facilities which facilitate commute alternatives. Employers in Superdistricts 2, 3 and 4 have less use and less interest in commute alternative services. Two-thirds to 80% of outlying employers are not interested in any type of commute alternatives programs.

A significant minority of employers in San Francisco provide a variety of commute alternatives programs to their workers. While employers have not widely embraced commute alternatives activities, a substantial proportion of employers are either interested or somehow involved in providing one or more of these services.

The "Employer Survey" explores the role of employer programs in encouraging transit and carpool use among employees. These data gauge the level of employer interest in promoting worker commute alternatives. These results assess the current preferences and interests of employer promotion of commute alternatives including but not limited to some work sites where the use of such programs is driven by existing regulations. While a minority of San Francisco establishments currently promotes the use of commute alternatives, survey results could prove helpful in the formulation of Citywide TDM policies.

TABLE IVC1

MARKETING PREFERENCES AMONG COMMUTE ALTERNATIVE PROGRAMS FOR ALL SAN FRANCISCO EMPLOYERS, 1992

PROGRAM	PREFERENCES				
ACTIVITIES	USE	PLANNING USE	INTERESTED	NOT INTERESTED	TOTAL
MARKETING MATERIALS	19.1%	1.8%	25.6%	53.7%	100.0%
EVENTS/PROMOTIONS	12.7%	0.7%	25.8%	60.8%	100.0%
INCENTIVES	15.0%	2.9%	21.1%	60.9%	100.0%
COORDINATOR SERVICES	24.7%	0.9%	20.6%	53.8%	100.0%
OPERATIONS	8.9%	2.5%	22.6%	85.9%	100.0%
FACILITIES	21.7%	0.3%	18.6%	81.4%	100.0%
POLICIES	2.9%	3.9%	16.8%	76.4%	100.0%

TABLE IVC2

MARKETING PREFERENCES AMONG COMMUTE ALTERNATIVE PROGRAMS FOR SUPERDISTRICT 1 EMPLOYERS, 1992

PROGRAM	PREFERENCES				
ACTIVITIES	USE	PLANNING USE	INTERESTED	NOT INTERESTED	TOTAL
MARKETING MATERIALS	22.7%	1.3%	29.0%	47.0%	100.0%
EVENTS/PROMOTIONS	11.2%	0.9%	32.1%	55.7%	100.0%
INCENTIVES	16.3%	4.3%	25.1%	54.2%	100.0%
COORDINATOR SERVICES	26.0%	1.3%	24.1%	48.8%	100.0%
OPERATIONS	5.4%	4.0%	29.5%	81.1%	100.0%
FACILITIES	19.1%	20.3%	60.6%	0.0%	100.0%
POLICIES	1.9%	4.5%	18.9%	74.7%	100.0%

TABLE IVC3
MARKETING PREFERENCES AMONG COMMUTE ALTERNATIVE PROGRAMS FOR SUPERDISTRICT 2, 3 AND 4 EMPLOYERS,

PROGRAM ACTIVITIES	PREFERENCES USE	PLANNING USE	INTERESTED	NOT INTERESTED	TOTAL
MARKETING MATERIALS	13.0%	1.9%	19.9%	65.1%	100.0%
EVENTS/PROMOTIONS	15.3%	0.3%	15.2%	69.3%	100.0%
INCENTIVES	12.8%	0.5%	14.2%	72.5%	100.0%
COORDINATOR SERVICES	22.3%	0.1%	14.6%	63.0%	100.0%
OPERATIONS	14.7%	0.1%	11.2%	74.1%	100.0%
FACILITIES	26.0%	0.9%	10.4%	62.7%	100.0%
POLICIES	4.7%	2.9%	13.0%	79.4%	100.0%

APPENDIX A

REGIONAL DEFINITIONS BY ZIP CODES

East Bay (Alameda, Contra Costa, Napa and Solano counties):

94106, 94120, 94130, 94234, 94501, 94506, 94507, 94509, 94510, 94514, 94517, 94518, 94519, 94520, 94521, 94523, 94530, 94533, 94535, 94536, 94538, 94539, 94541, 94542, 94544, 94545, 94546, 94549, 94550, 94552, 94553, 94555, 94556, 94558, 94559, 94560, 94564, 94565, 94566, 94568, 94572, 94577, 94578, 94579, 94580, 94583, 94585, 94587, 94588, 94589, 94590, 94591, 94594, 94595, 94597, 94598, 94601, 94602, 94603, 94604, 95605, 94606, 94607, 94609, 94610, 94611, 94612, 94618, 94619, 94621, 94627, 94650, 94702, 94703, 94704, 94705, 94706, 94707, 94708, 94709, 94710, 94801, 94803, 94804, 94806, 94808, 94849, 94880, 95202, 95203, 95204, 95209, 95227

North Bay (Marin and Sonoma counties):

94210, 94902, 94903, 94904, 94905, 94911, 94920, 94923, 94924, 94925, 94928, 94930, 94931, 94933, 94939, 94941, 94943, 94944, 94945, 94947, 94948, 94949, 94951, 94952, 94954, 94956, 94957, 94959, 94960, 94965, 94966, 94970, 94976, 94978, 94979, 95401, 95403, 95404, 95407, 95409, 95436, 95444, 95446, 95448, 95464, 95472, 95473, 95476

South Bay (San Mateo and Santa Clara counties):

95148, 95136, 95135, 95132, 95131, 95129, 95128, 95127, 95128, 95127, 95126, 95125, 95124, 95122, 95121, 95118, 95117, 95112, 95111, 95060, 95054, 95051, 95035, 95032, 95020, 95018, 95014, 95008, 94476, 94469, 94464, 94438, 94417, 94415, 94411, 94410, 94404, 94403, 94402, 94401, 94396, 94314, 94306, 94305, 94303, 94301, 94125, 94100, 94087, 94086, 94083, 94080, 94070, 94066, 94065, 94063, 94062, 94061, 94044, 94043, 94041, 94038, 94037, 94030, 94027, 94025, 94022, 94020, 94019, 94018, 94017, 94015, 94014, 94012, 94010, 94005, 94002

San Francisco:

Superdistrict 1:
94101, 94104, 94105, 94108, 94111, 94133, 94137, 94142; portion of 94102, 94103, 94107, 94109

Superdistrict 2:
94115, 94117, 94118, 94121, 94123, 94129; portion of 94102, 94109, 94114

Superdistrict 3:
94110, 94112, 94114, 94124, 94131, 94134; portion of 94103, 94107, 94127

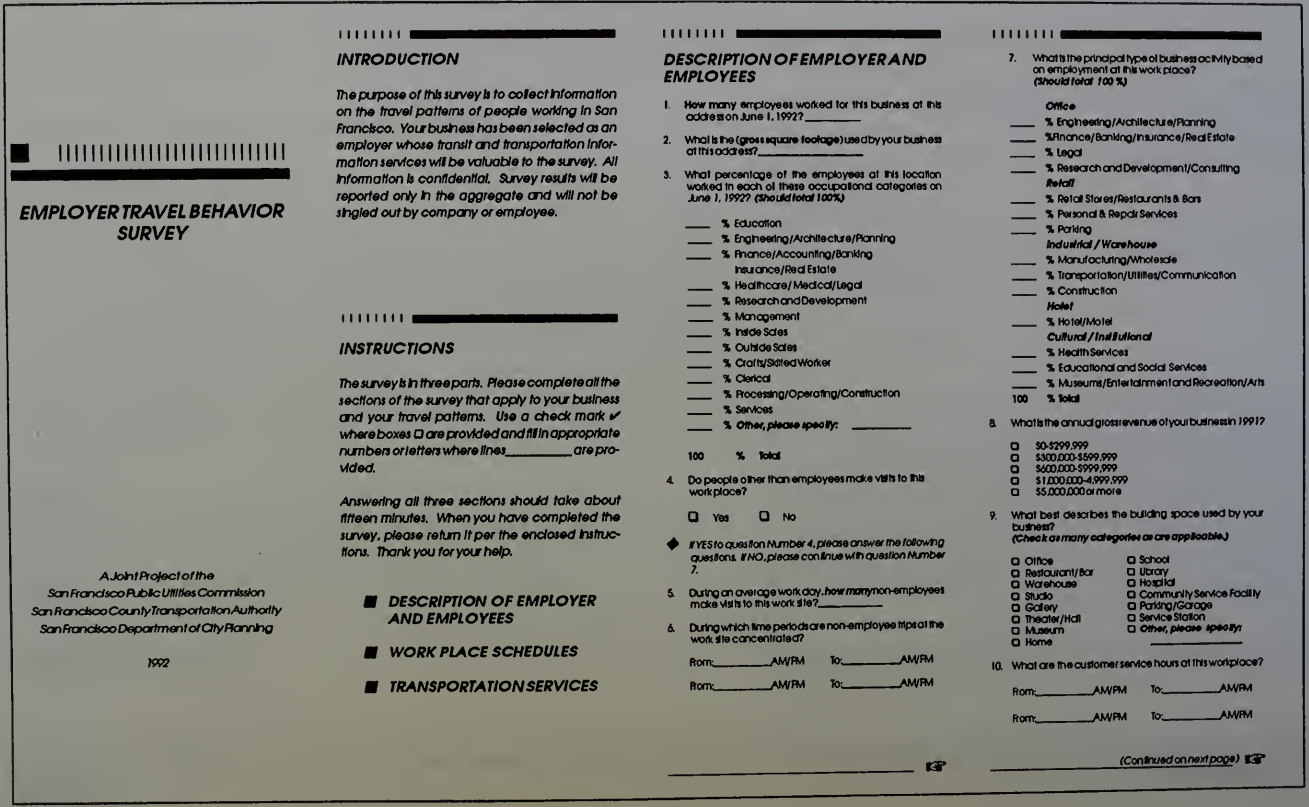
Superdistrict 4:
94116, 94122, 94132, 94143; portion of 94127

Other:

90401, 91233, 92121, 92422, 92941, 94113, 94159, 94166, 95330, 95350, 95361, 95376, 95616, 95640, 95687, 95688, 95746, 95823, 95842, 95901, 95952, 95969, 96110, 96114, 96806, 96819, 96940, 97005, 97061, 98006, 98510

APPENDIX B

EMPLOYER SURVEY



EMPLOYER TRAVEL BEHAVIOR SURVEY

A Joint Project of the
San Francisco Public Utilities Commission
San Francisco County Transportation Authority
San Francisco Department of City Planning

1992

INTRODUCTION

The purpose of this survey is to collect information on the travel patterns of people working in San Francisco. Your business has been selected as an employer whose transit and transportation information services will be valuable to the survey. All information is confidential. Survey results will be reported only in the aggregate and will not be singled out by company or employee.

INSTRUCTIONS

The survey is in three parts. Please complete all the sections of the survey that apply to your business and your travel patterns. Use a check mark ✓ where boxes ☐ are provided and fill in appropriate numbers or letters where lines ________ are provided.

Answering all three sections should take about fifteen minutes. When you have completed the survey, please return it per the enclosed instructions. Thank you for your help.

- ***DESCRIPTION OF EMPLOYER AND EMPLOYEES***
- ***WORK PLACE SCHEDULES***
- ***TRANSPORTATION SERVICES***

DESCRIPTION OF EMPLOYER AND EMPLOYEES

1. How many employees worked for this business at this address on June 1, 1992? ________

2. What is the (**gross square footage**) used by your business at this address? __________

3. What percentage of the employees at this location worked in each of these occupational categories on *June 1, 1992? (Should total 100%)*

____ % Education
____ % Engineering/Architecture/Planning
____ % Finance/Accounting/Banking Insurance/Real Estate
____ % Healthcare/ Medical/Legal
____ % Research and Development
____ % Management
____ % Inside Sales
____ % Outside Sales
____ % Crafts/Skilled Worker
____ % Clerical
____ % Processing/Operating/Construction
____ % Services
____ % ***Other, please specify:*** ________

100 % **Total**

4. Do people other than employees make visits to this workplace?

☐ Yes ☐ No

◆ *If YES to question Number 4, please answer the following questions. If NO, please continue with question Number 7.*

5. During an average work day, ***how many*** non-employees make visits to this work site? ________

6. During which time periods are non-employee trips at the work site concentrated?

From:________AM/PM To:________AM/PM
From:________AM/PM To:________AM/PM

☞

7. What is the principal type of business activity based on employment at this work place? ***(Should total 100 %)***

Office
____ % Engineering/Architecture/Planning
____ % Finance/Banking/Insurance/Real Estate
____ % Legal
____ % Research and Development/Consulting
Retail
____ % Retail Stores/Restaurants & Bars
____ % Personal & Repair Services
____ % Parking
Industrial / Warehouse
____ % Manufacturing/Wholesale
____ % Transportation/Utilities/Communication
____ % Construction
Hotel
____ % Hotel/Motel
Cultural / Institutional
____ % Health Services
____ % Educational and Social Services
____ % Museums/Entertainment and Recreation/Arts
100 % **Total**

8. What is the annual gross revenue of your business in *1991?*

☐ $0-$299,999
☐ $300,000-$599,999
☐ $600,000-$999,999
☐ $1,000,000-4,999,999
☐ $5,000,000 or more

9. What best describes the building space used by your business? ***(Check as many categories as are applicable.)***

☐ Office
☐ Restaurant/Bar
☐ Warehouse
☐ Studio
☐ Gallery
☐ Theater/Hall
☐ Museum
☐ Home
☐ School
☐ Library
☐ Hospital
☐ Community Service Facility
☐ Parking/Garage
☐ Service Station
☐ ***Other, please specify:*** ________

10. What are the customer service hours at this workplace?

From:________AM/PM To:________AM/PM
From:________AM/PM To:________AM/PM

(Continued on next page) ☞

WORK PLACE SCHEDULES

11. This section lists questions on types of work schedule policies. Please use this table to describe the business work hours at this site.

FIXED WORK HOURS An eight-hour day starting at a management-assigned time. For example, 8 AM to 5 PM.		
HOURS (Please circle AM or PM for each entry.)		**PERCENTAGE OF EMPLOYEES**
Shift 1	From: AM/PM To: AM/PM	%
Shift 2	From: AM/PM To: AM/PM	%
Shift 3	From: AM/PM To: AM/PM	%
Other	From: AM/PM To: AM/PM	%

STAGGERED WORK HOURS Management assigns the arrival and departure times for groups of employees so that the groups start at different times.		
HOURS (Please circle AM or PM for each entry)		**PERCENTAGE OF EMPLOYEES**
Shift 1	From: AM/PM To: AM/PM	%
Shift 2	From: AM/PM To: AM/PM	%
Shift 3	From: AM/PM To: AM/PM	%
Other	From: AM/PM To: AM/PM	%

(table continues on next page) ☞

WORK PLACE SCHEDULES

COMPRESSED WORK WEEK Management reschedules the normal five-day work week to longer hours per day, but fewer days per week. For example, eight 10-hour days in a two-week period.		
HOURS (Please circle AM or PM for each entry.)		**PERCENTAGE OF EMPLOYEES**
6 Days / 12 hours per day	From: AM/PM To: AM/PM	%
8 Days / 10 hours per day	From: AM/PM To: AM/PM	%
9 Days / 9 hours per day	From: AM/PM To: AM/PM	%
Other: Please specify:		%

OTHER WORK HOURS BY ARRANGEMENT Employees may arrange their arrival and departure times, and/or vary the length of their work day.	
What is the percentage of employees with this schedule?	%
What percentage of employees are part-time or per diem?	%

☞

TRANSPORTATION SERVICES

This section asks questions about what your business does to promote transit and carpool use among your employees.

12 What program activities are being used by your business to promote the use of commute alternatives?

	Use	Planning	Interested	Not Interested
A. ***Marketing Materials*** Newsletters, articles Flyers, paycheck stuffers, Brochures Posters	☐	☐	☐	☐
B. ***Events/Promotions*** New employee orientation, Transportation fairs/events, Meetings to promote walking/cycling	☐	☐	☐	☐
C. ***Incentives*** Contests and prizes, Parking pricing, Employee transportation allowance Transit/vanpool subsidies, Flexible hours for ridesharing, Time off for using alternatives	☐	☐	☐	☐
D. ***Coordinator Services*** Ridematching services, Transit pass sales, Vanpool formation, Car/vanpool passenger referral	☐	☐	☐	☐
E. ***Operations*** Guaranteed return trip, Vanpools, Shuttle Service	☐	☐	☐	☐
F. ***Facilities*** Transit shelters, Bike racks, Showers/lockers, Pedestrian access	☐	☐	☐	☐
G. ***Policies*** Telecommuting	☐	☐	☐	☐

☞

13 Do you provide on-site child care services for your employees?

☐ YES ☐ NO

◆ *If NO, is future child care planned for the workplace?*

☐ Desired
☐ Planned
☐ No current plans

14 How would you describe your business' parking situation for employees? Would you say there are:

☐ No parking shortages
☐ Occasional parking shortages
☐ Frequent parking shortages
☐ No need for employee parking

15. For customers or visitors, how would you describe your business parking situation. Would you say there are:

☐ No parking shortages
☐ Occasional parking shortages
☐ Frequent parking shortages
☐ No need for customer parking

16 Is parking provided by the employer at this work place?

☐ YES ☐ NO

◆ *If YES, to question number 17, please answer the following question If NO, you are finished with the survey.*

17 Who uses on-site parking?
(check as many categories as are applicable)

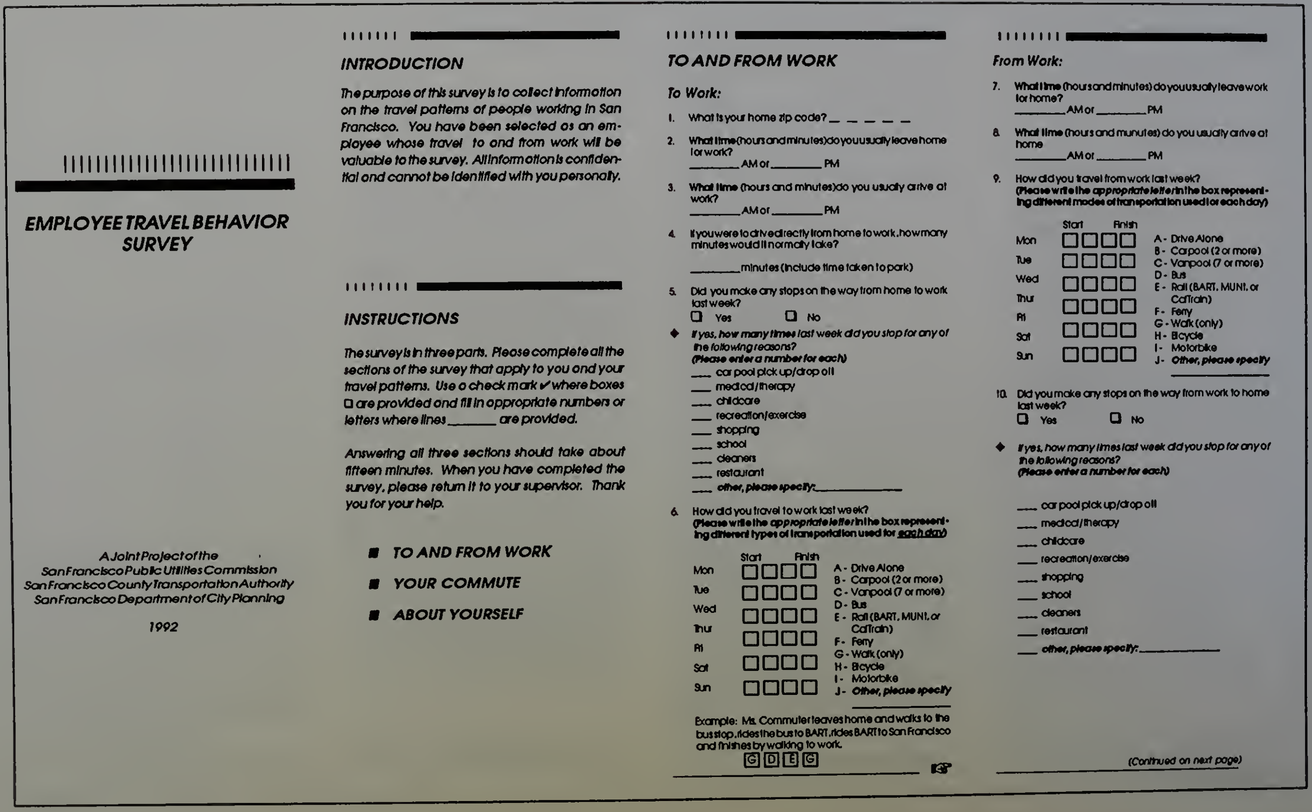
☐ Employees
☐ Customers
☐ Public

Other, please specify: ____________

Thank you for your participation in this survey. END

APPENDIX C

EMPLOYEE SURVEY



EMPLOYEE TRAVEL BEHAVIOR SURVEY

A Joint Project of the
San Francisco Public Utilities Commission
San Francisco County Transportation Authority
San Francisco Department of City Planning

1992

INTRODUCTION

The purpose of this survey is to collect information on the travel patterns of people working in San Francisco. You have been selected as an employee whose travel to and from work will be valuable to the survey. All information is confidential and cannot be identified with you personally.

INSTRUCTIONS

The survey is in three parts. Please complete all the sections of the survey that apply to you and your travel patterns. Use a check mark ✓ where boxes ☐ are provided and fill in appropriate numbers or letters where lines _______ are provided.

Answering all three sections should take about fifteen minutes. When you have completed the survey, please return it to your supervisor. Thank you for your help.

- *TO AND FROM WORK*
- *YOUR COMMUTE*
- *ABOUT YOURSELF*

TO AND FROM WORK

To Work:

1. What is your home zip code? _ _ _ _ _
2. What time (hours and minutes) do you usually leave home for work?
   ________ AM or ________ PM
3. What time (hours and minutes) do you usually arrive at work?
   ________ AM or ________ PM
4. If you were to drive directly from home to work, how many minutes would it normally take?
   ________ minutes (include time taken to park)
5. Did you make any stops on the way from home to work last week?
   ☐ Yes ☐ No

◆ ***If yes, how many times last week did you stop for any of the following reasons?***
(Please enter a number for each)

____ car pool pick up/drop off
____ medical/therapy
____ childcare
____ recreation/exercise
____ shopping
____ school
____ cleaners
____ restaurant
____ ***other, please specify:*** ____________

6. How did you travel to work last week?
   (Please write the *appropriate letter* in the box representing different types of transportation used for each day)

	Start			Finish
Mon	☐	☐	☐	☐
Tue	☐	☐	☐	☐
Wed	☐	☐	☐	☐
Thur	☐	☐	☐	☐
Fri	☐	☐	☐	☐
Sat	☐	☐	☐	☐
Sun	☐	☐	☐	☐

A - Drive Alone
B - Carpool (2 or more)
C - Vanpool (7 or more)
D - Bus
E - Rail (BART, MUNI, or CalTrain)
F - Ferry
G - Walk (only)
H - Bicycle
I - Motorbike
J - ***Other, please specify*** ____________

Example: Ms. Commuter leaves home and walks to the bus stop, rides the bus to BART, rides BART to San Francisco and finishes by walking to work.
G D E G

☞

From Work:

7. What time (hours and minutes) do you usually leave work for home?
   ________ AM or ________ PM
8. What time (hours and munutes) do you usually arrive at home
   ________ AM or ________ PM
9. How did you travel from work last week?
   (Please write the *appropriate letter* in the box representing different modes of transportation used for each day)

	Start			Finish
Mon	☐	☐	☐	☐
Tue	☐	☐	☐	☐
Wed	☐	☐	☐	☐
Thur	☐	☐	☐	☐
Fri	☐	☐	☐	☐
Sat	☐	☐	☐	☐
Sun	☐	☐	☐	☐

A - Drive Alone
B - Carpool (2 or more)
C - Vanpool (7 or more)
D - Bus
E - Rail (BART, MUNI, or CalTrain)
F - Ferry
G - Walk (only)
H - Bicycle
I - Motorbike
J - ***Other, please specify*** ____________

10. Did you make any stops on the way from work to home last week?
    ☐ Yes ☐ No

◆ ***If yes, how many times last week did you stop for any of the following reasons?***
(Please enter a number for each)

____ car pool pick up/drop off
____ medical/therapy
____ childcare
____ recreation/exercise
____ shopping
____ school
____ cleaners
____ restaurant
____ ***other, please specify:*** ____________

(Continued on next page)

YOUR COMMUTE

11. **How many vehicles are available to your household?**
(Please enter number of vehicles)
____ auto, trucks and/or vans
____ motor bikes

12 How much does parking cost in the area where you work?

$ ___ . ___ per day

13 How important are each of the following factors in your trip to work decisions?
(Please circle one number for each)

	Very Important			Not Important
Commuting Costs	1	2	3	4	5
Convenience	1	2	3	4	5
Travel Time	1	2	3	4	5
Need car before, during and after work	1	2	3	4	5
Comfort, relaxation and privacy	1	2	3	4	5
Personal safety	1	2	3	4	5
Transit service not available	1	2	3	4	5
Do not want to depend on others	1	2	3	4	5
Enjoy traveling with others	1	2	3	4	5
Environmental concerns	1	2	3	4	5

14 If you carpool, **how many people** do you have in the car including the driver, on the way to and from work?
________ to work ________ from work

◆ *If you use transit, please onwer questions 15 through 9. If you do not use transit, please go to question number 20.*

15 If you use MUNI for any portion of your trip, how many times do you transfer aboard MUNI?
________ to work ________ from work

16. If you use MUNI, how do you usually pay your fare?
☐ Cash
☐ Fast Pass
☐ Bart Plus Pass
☐ ***Other, please specify:*** ____________

☞

17. **How many times last week did you transfer to/from MUNI to another transit service?**
(Enter a number for each)
____ AC Transit
____ Caltrain
____ SamTrans
____ BART
____ Golden Gate Transit Bus
____ Golden Gate Ferry
____ Harbor Bay Ferry
____ Oakland/Alamda Ferry
____ Vallejo Ferry
____ ***Other, please Specify:*** ____________

◆ *If you use Bart Plus Pass or MUNI Fast Pass, please answer questions 18 and 19. If you do not use Bart Plus Pass or Fast Pass, please go to instructions before question number 20.*

18. How often last week did you use a Bart Plus Pass on MUNI?
____

19. How often last week did you use a Fast Pass on Bart?
____

◆ *If you **leave your workplace** during the course of your workday, please respond to questions 20 and 21. If you typically arrive at work and do not leave during the work day, please go to question 22.*

20. **How many times last week after arriving at work did you leave and return to your workplace?** ***(Each time away from the workplace counts as two trips, one trip to leave and one to come back)***
________ Number of trips

21. **How many times** last week did you travel during the workday for the following purposes?
(Please enter a number for each)

Purposes	MUNI	BART	AUTO	WALK	OTHER
business	____	____	____	____	____
eating	____	____	____	____	____
recreation	____	____	____	____	____
childcare	____	____	____	____	____
shopping	____	____	____	____	____
medical	____	____	____	____	____
personal	____	____	____	____	____
other	____	____	____	____	____

☞

ABOUT YOURSELF

◆ *If you have children, please answer questions numbered 22 through 25. If you do not have children, please go to question number 26.*

22. Please **specify the number of children** (under 13 years of age) you have or care for, according to the following age groups.
(Enter a number for each age group that applies to you)
____ Expecting or newborn
____ 6 weeks to under 3 years (infant/toddler)
____ 3 years to 5 years (preschool)
____ 5 to 6 years (kindergarten)
____ 6 to 12 years (school-age)

23. For each of your children, please indicate the childcare arrangements you currently use while you are working.

	Child's Age		
	Infant/ Toddler	Pre School	School age
Spouse/Partner	☐	☐	☐
Unpaid relative or friend (not spouse)	☐	☐	☐
Paid caregiver in own home	☐	☐	☐
Family daycare home (paid caregiver in his or her home	☐	☐	☐
Child care center or preschool	☐	☐	☐
After-school program	☐	☐	☐
None (children on their own)	☐	☐	☐

24. For children under six years (prior to school-age), assuming quality and cost were the same, where would you prefer the child care to be?
(Please check the box that applies to you)
☐ Closer to home
☐ On the way to or from work
☐ Closer to work
☐ It doesn't matter

25. When you drop off or pick up your child(ren) to either childcare or school, **how much extra time** does it add to the shortest one-way route you could take to work?
__________ Hours __________ Minutes
☐ My child(ren)'s caregiver/school is located at work or on the shortest route to work.
☐ My spouse or someone drops off or picks up my children.
☐ Childcare drop off or pick-up needs affect how I travel to and/or from work.

☞

26. Which of the following categories best describes your current occupation?
(Please check the box that applies to you)
☐ Education
☐ Engineering/Architecture/Planning
☐ Finance/Accounting/Banking Insurance/Real Estate
☐ Healthcare/ Medical/Legal
☐ Research and Development
☐ Management
☐ Sales/Marketing
☐ Crafts/Skilled Worker
☐ Clerical
☐ Services
☐ Processing Operating/ Construction
☐ ***Other, please specify:*** ____________

27. Are you: ☐ Male ☐ Female

28. Do you own your own home? ☐ Yes ☐ No

29. What range best describes your 1991 household income?
(Please check the box that applies to you)
☐ Less than $17,000
☐ $17,000 - $25,999
☐ $26,000 - $32,999
☐ $33,000 - $43,999
☐ $44,000 - $53,999
☐ $54,000 - $64,999
☐ $65,000 or more

30. Including yourself, how many people lived in your household on **January 1, 1992.**
(Please enter one number)
____

31. How many people including yourself, are employed in your household?
(Please enter one number)
____

32 Of those people that are employed other than yourself, how many work in San Francisco?
(Please enter one number)
____

33. During your work day do you have an open space like parks, plazas, roof tops available to you?
☐ Yes ☐ No

34. Where would you prefer an open space to be located?
☐ At the work place
☐ Walking distance from work

35. How often each week during your work day do you (or would you) use open space?
(Please check one box)
☐ Never' ☐ Once ☐ Twice
☐ Three times ☐ Four times ☐ More than four times

END
Thank You

APPENDIX D

MODE SPLITS: DOWNTOWN VS. REST OF CITY

1. PRIMARY MODE CHOICE TO WORK (SUPERDISTRICT 1)

MODE	TRIP ORIGIN							
	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	OTHER
DRIVE ALONE	8.8%	18.4%	22.8%	23.8%	10.8%	28.1%	32.4%	
CAR POOL	2.3%	7.8%	9.5%	11.6%	17.8%	18.0%	9.5%	
VAN POOL	0.4%			1.5%	4.5%		0.3%	56.3%
FERRY				0.5%	1.1%	10.6%		21.8%
WALK	39.2%	2.9%	2.4%	0.6%				21.8%
BICYCLE	1.2%	1.1%	1.4%		0.1%			
MOTORBIKE	2.1%	2.5%	2.3%	1.5%	0.1%		0.8%	
OTHER	4.4%	0.3%	0.5%	0.5%	0.1%		0.3%	
SAMTRANS							19.3%	
MUNI	41.8%	66.9%	54.0%	60.2%				
AC TRANSIT					8.2%			
GG TRANSIT BUS						43.8%		
EASTBAY BART					56.0%			
PENINSULA RAIL- BART/CALTRAIN							28.4%	
PENINSULA RAIL/MUNI COMBO							11.0%	
SUPERDISTRICT 3 WHO BART/MUNI			7.1%					
FERRY/MUNI						1.7%		
BART/MUNI					1.5%			
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

2. PRIMARY MODE CHOICE TO WORK (SUPERDISTRICTS 2, 3 AND 4)

MODE	TRIP ORIGIN							
	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	OTHER
DRIVE ALONE	27.9%	42.5%	50.6%	50.1%	46.7%	63.6%	73.3%	44.6%
CAR POOL	10.7%	10.5%	11.7%	16.6%	22.4%	21.5%	13.5%	32.2%
VAN POOL	0.4%	0.1%	0.1%	0.7%	3.0%	1.3%	0.1%	3.8%
FERRY						0.5%		
WALK	13.9%	17.2%	7.6%	3.2%			0.2%	6.9%
BICYCLE	1.5%	2.0%	2.7%	0.9%	0.0%	0.3%	0.3%	6.2%
MOTORBIKE	2.1%	1.7%	3.0%	0.6%	0.2%	1.6%	0.4%	
OTHER	1.5%	1.4%	1.0%	1.0%	0.4%	0.3%	0.7%	6.2%
SAMTRANS							5.7%	
MUNI	42.1%	24.7%	21.1%	26.7%				
AC TRANSIT					3.1%			
GG TRANSIT BUS						9.9%		
EASTBAY BART					15.3%			
PENINSULA RAIL- BART/CALTRAIN							4.4%	
PENINSULA RAIL/MUNI COMBO							1.4%	
SUPERDISTRICT 3 WHO BART/MUNI			2.2%					
FERRY/MUNI					0.2%	0.7%		
BART/MUNI					6.9%			
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

3. GEOGRAPHIC SHARES OF PRIMARY COMMUTE MODES TO WORK (SUPERDISTRICT 1)

MODE	TRIP ORIGIN								
	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	OTHER	TOTAL
DRIVE ALONE	1.8%	4.9%	6.4%	3.6%	7.6%	3.8%	9.0%		37.0%
CAR POOL	1.1%	4.8%	6.2%	4.2%	29.3%	6.2%	6.2%		57.9%
VAN POOL	1.5%			4.9%	67.8%		1.9%	3.9%	80.0%
TRANSIT	5.6%	11.7%	11.3%	6.2%	31.2%	5.5%	10.4%	0.1%	82.1%
MUNI	12.4%	26.0%	22.2%	13.7%					74.3%
FERRY				2.8%	30.2%	62.4%		2.8%	98.2%
FERRY/MUNI						73.3%			73.3%
WALK	48.2%	4.7%	4.1%	0.6%				0.4%	58.1%
BICYCLE	9.4%	12.3%	16.0%		2.9%				40.5%
MOTORBIKE	10.6%	16.7%	16.5%	5.9%	1.8%		5.4%		56.9%
OTHER	36.2%	2.9%	5.8%	2.9%	2.9%		3.8%		54.5%

4. GEOGRAPHIC SHARES OF PRIMARY COMMUTE MODES TO WORK (SUPERDISTRICTS 2, 3 AND 4)

MODE	TRIP ORIGIN								
	SUPERDISTRICT 1	SUPERDISTRICT 2	SUPERDISTRICT 3	SUPERDISTRICT 4	EAST BAY	NORTH BAY	SOUTH BAY	OTHER	TOTAL
DRIVE ALONE	2.5%	7.6%	13.1%	7.1%	8.8%	6.0%	17.5%	0.4%	63.0%
CAR POOL	2.2%	4.4%	7.1%	5.5%	9.9%	4.8%	7.5%	0.8%	42.1%
VAN POOL	0.8%	0.3%	0.8%	2.1%	12.1%	2.6%	0.6%	0.8%	20.0%
TRANSIT	2.5%	2.9%	4.0%	2.5%	3.5%	0.7%	1.8%		17.9%
MUNI	5.5%	6.5%	8.1%	5.6%					25.7%
FERRY						1.8%			1.8%
FERRY/MUNI					8.8%	18.0%			26.7%
WALK	7.5%	18.9%	12.1%	2.8%			0.2%	0.4%	41.9%
BICYCLE	5.3%	14.7%	28.0%	5.4%		1.2%	2.5%	2.5%	59.5%
MOTORBIKE	4.8%	7.7%	19.8%	2.8%	0.9%	4.4%	2.7%		43.1%
OTHER	5.3%	10.1%	10.7%	5.7%	2.9%	1.2%	7.0%	2.6%	45.5%

APPENDIX E

DAILY TRIP GENERATION RATES IN SAN FRANCISCO, 1992

	SQ FT/WORKER	WORKERS/1000 SQ FT	TRIPS/1000 SQ FT	TRIPS/WORKER
CITYWIDE				
OFFICE	385.69	2.59	3.38	1.30
RETAIL	867.65	1.15	3.46	3.00
MANUFACTURING	442.20	2.26	2.34	1.03
CULTURAL	437.23	2.29	3.63	1.59
ALL USES	654.20	1.53	3.10	2.03
SUPERDISTRICT 1				
OFFICE	379.40	2.64	3.37	1.28
RETAIL	1289.97	0.78	4.01	5.17
MANUFACTURING	383.56	2.61	2.02	0.78
CULTURAL	330.73	3.02	3.81	1.26
ALL USES	499.64	2.00	3.39	1.70
SUPERDISTRICTS 2, 3 AND 4				
OFFICE	440.48	2.27	3.56	1.57
RETAIL	606.10	1.65	2.85	1.73
MANUFACTURING	1768.41	0.57	1.99	3.52
CULTURAL	464.33	2.15	3.58	1.66
ALL USES	860.58	1.16	2.63	2.26

CREDITS

Report prepared by the San Francisco Department of City Planning, May 1993

Lucian Blazej, Director of Planning
Amit Ghosh, Chief of Comprehensive Planning
Rebecca Kohlstrand, Chief Planner
Bill Wycko, Manager of Transportation Section
Barry Polley and Charles Rivasplata, Transportation Planners

Project Manager: Paul A. Lord, Jr.
Project Team: Miriam Chion, Lilia Medina, Jasper Rubin, Nandini Shridhar

With Assistance From: Peter Ajemian, Zeth Ajemian, Pedro Arce, Julian Banales, Irene Cheng-Tam, Alton Chinn, Josh Deng, Scott Dowdee, Gladys Fausto, Dave Feltham, Barbara Hall, Martha Kessler, Janice King, Agnes Lau, David Levy, Ana Luna, Lulu Mabelitini-Hwang, Pamelia Maxwell, Danilo Salcedo, Hansen Toy

San Francisco Public Utilities Commission: Fred Howell, Sue Stropes
San Francisco County Transportation Authority: Carmen Clark
Survey Administration Consultants: Nelson\Nygaard Associates (Diane Nygaard) with the assistance of Kiyomura-Ishimoto Associates and Harold Charns
Research Consultants: Metro Dynamics, Inc. (Gary Edson)